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Volume 22 APRIL 1953 Number 4

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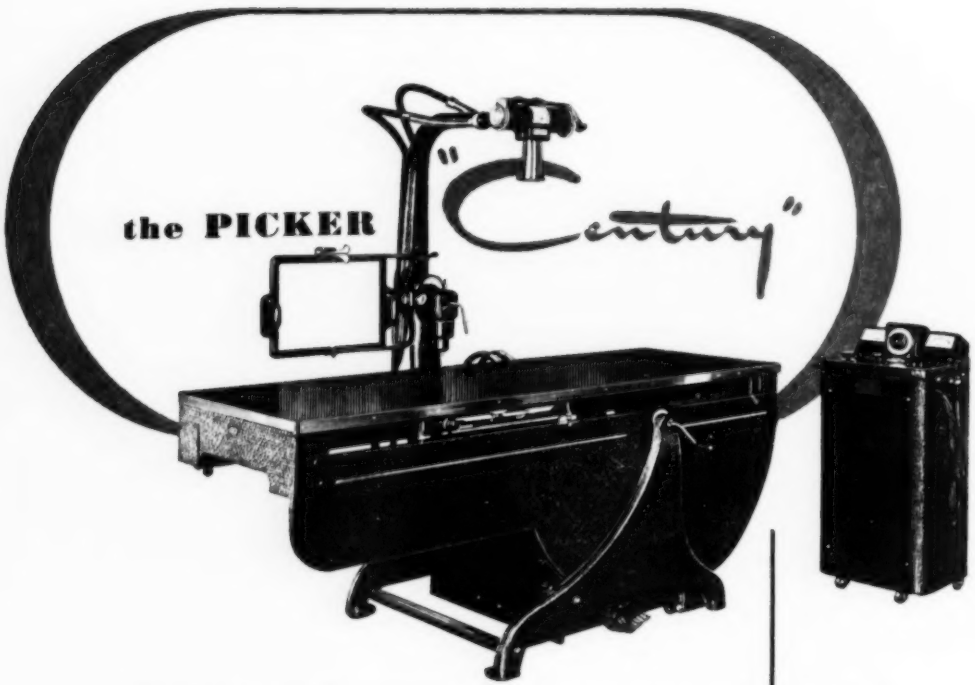

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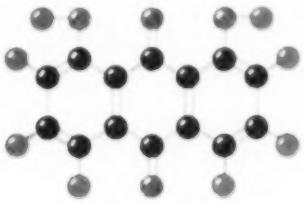

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ARTHUR A. TOWER, M.D., has announced his retirement as plant physician at the New Departure Division of the General Motors Corporation in Meriden. He will devote his full time to pediatric practice.

CHARLES I. BARRON, M.D., who has been associated with Lockheed Aircraft Corporation, Burbank, California, for the past three years, has been named Medical Director for the California Division of that company, filling the position held by the late DR. FENN POOLE. DR. BARRON came to Lockheed from Chicago where he had charge of the Medical Department of the Chicago Quartermaster Depot for about two years. He served three years with the Army Air Force as flight surgeon, after which he spent two years as resident in internal medicine at the Veterans Hospital at Portland, Oregon. He is a graduate of the University of Illinois.

T. DAVID TRUAN, a biostatistician, has been added to the staff of Industrial Hygiene Foundation, Mellon Institute, Pittsburgh. MR. TRUAN will devote full time to the research program on noise in industry which is currently being undertaken by the Foundation. Prior to joining the Foundation MR. TRUAN was associated with the Graduate School of Public Health of the University of Pittsburgh, where he worked with DR. ANTHONY CIOCCO.

HAROLD BRANDALEONE, M.D., F.A.C.P., has been appointed Medical Director of United Parcel Service, New York City. This company has a fully equipped modern Medical Department now under construction for complete medical service to its employees. DR. BRANDALEONE will be assisted by DR. GERALD J. FRIEDMAN in the

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capacity of Assistant Medical Director. DR. BRANDALEONE graduated from New York University College of Medicine in 1931. He is a Diplomate of the American Board of Internal Medicine, Assistant Visiting Physician at Bellevue Hospital and University Hospital, and Assistant Clinical Professor of Medicine, New York University School of Medicine.

RODNEY R. BEARD, M.D., writes from San Francisco that since he was appointed Professor and Executive of the Department of Public Health and Preventive Medicine, Stanford University School of Medicine, in the autumn of 1949, he has become associated as Medical Consultant with W. P. Fuller and Company, paint manufacturers, and is also teaching at the University of California School of Public Health, where he is Clinical Professor of Occupational Health. "We are doing some work on cholinesterase in the laboratory here, and also looking for carcinogenicity in an oily material which came to our attention. In the laboratory at the University of California, we are undertaking some work on diatomaceous earth pneumoconiosis in association with PROFESSOR B. D. TEBBENS, Associate Professor of Industrial Hygiene Engineering. Our laboratory here is also the center for an investigative project of the Cardiac-in-Industry of the California Heart Association."

RUTHERFORD T. JOHNSTONE, M.D., has been appointed Medical Director for the Southern California Gas Company, Los Angeles. Concerning his appointment, DR. JOHNSTON writes as follows: "As you know my past practice has been that of a consultant to industry in which I was accessible to management, to labor, or to the individual worker. The clinical aspect of occupational medicine has been my paramount interest. I can now report that while I am the Medical Director of a company which employes approximately 7,000 workers I still retain my office and my consultant practice. I do not have an office on the company premises. My work requires the overseeing of the activities of the physicians on the panel, as well as examining and interviewing the individual worker when I feel that this is necessary. All of

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this is done in my own office. I will do this on a year's trial in order that I may estimate whether or not I can continue to practice medicine without an imposition upon the time I like to spend with an individual patient. I am intending to adhere to the philosophy of practice that I have followed all these years, and if newer obligations interfere with this policy I shall relinquish more recent obligations."

C. C. CUTTING, M.D., an Oakland, California, physician on February 1 assumed charge of the industrial medical services for Hanford Works construction personnel of the Atomic Energy Commission. CHARLES TUDOR, M.D., former health officer, will be resident physician in charge of the examination center. Assisting him will be other physicians, nurses, and clerical workers. The services to be performed were formerly handled by the General Electric industrial Medical Section, which asked AEC to be relieved of the duties. GE will continue to provide this type of service for its own operational employees. DR. CUTTING, a native Californian, is a graduate of Stanford Medical School. He first came to the Pacific Northwest in 1938 to be Chief Surgeon at Grand Coulee dam during its construction period. After three years at the dam, he went to the Mason Clinic hospital in Seattle. In 1942 he joined the Permanente Foundation and served at the Richmond, California, shipyards during the war years. Then he went to Permanenta Hospital, Oakland, as chief of staff. He now is Director of Orthopedics for all Kaiser Foundation medical cen-

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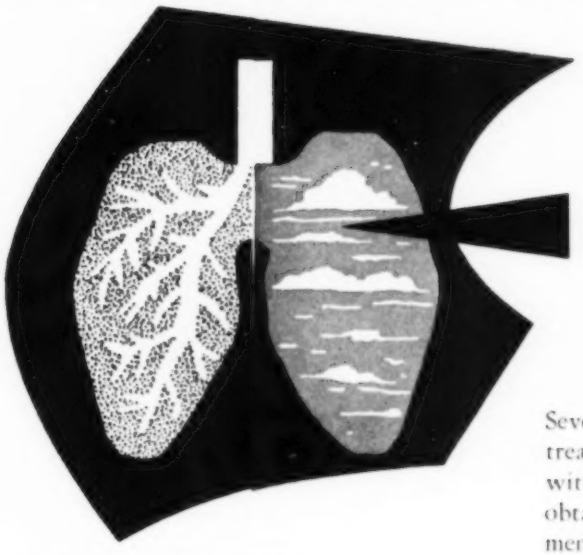

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ters. DR. TUDOR was assigned to the Washington State Health Department by the U.S. Public Health Service in 1943. He served as health officer in Benton and Franklin counties until 1946 when he attended Columbia University to get a master's degree in public health. Then he returned to Pasco in 1947 to resume the health post. In December, 1949, he moved to Binghamton, New York, as city health officer.

—*Pasco, Washington, Herald*, February 1, 1953.

THE FIRST meeting of the Medical and Health Services Committee of Area 1 Civil Defense was held February 24 at the offices of the Chamber of Commerce, Paterson, New Jersey. DR. G. ALBIN LIVA, Director, presided at the meeting, which was devoted to organizational matters, and two reports, one from DR. RAYMOND H. KELLY, of Wyckoff, head of the industrial division and the other from DR. GEORGE HELLER, of Ridgewood, on achieving the cooperation of plant physicians and practitioners residing in Bergen or Passaic counties but practicing elsewhere. DR. KELLY, head of the medical staff at E. I. du Pont de Nemours plant at Pompton Lakes, is conducting a survey in plants with 500 or more employees aimed at evaluating the efficiency of their first aid departments. DR. HELLER'S survey is intended to reach physicians whose activities are confined to industrial work in other areas than Bergen and Passaic counties and bringing them into the Area 1 set-up.

—*Paterson Call*, February 26, 1953.

CHICAGO SOCIETY OF INDUSTRIAL MEDICINE AND SURGERY held its midwinter scientific meeting February 9, 8:15 P.M., at the Palmer House. "Intramedullary Fracture Fixation" was presented by FELIX JANSEY, M.D., Northwestern University Medical School; and "Industrial Dermatosis" by LEONARD F. WEBER, M.D., University of Illinois College of Medicine.

Recent Deaths

JOHN R. NILSSON, M.D., 74, at Omaha, Nebraska. DR. NILSSON had been Chief Surgeon of the Union Pacific Railroad.

WALTER G. KING, 92, at Chautauqua, New York. MR. KING was elected President of the National Safety Council in 1926, and since his term as president, he had been an honorary life member of the Council. He was the inventor of the safety goggle.

GEORGE DEWEY BLAIR, M.D., at Pittsburgh, December 31, 1952. DR. BLAIR had been Medical Director of Rockwell Manufacturing Company, Yellow Cab Company of Pittsburgh, Pittsburgh Meter Company, and other concerns, and handled compensation cases for numerous companies. He received his M.D. at Jefferson Medical College in 1923. He was a member of IMA and the AMERICAN ASSOCIATION OF RAILWAY SURGEONS.

HAROLD EARNHEART, M.D., F.A.C.S., at Wilmette, Illinois, February 7, 1953. DR. EARNHEART was born at Dongola, Illinois, 1903; received his M.D. at University of Oklahoma School of Medicine in 1929. He had been Medical Director of Swift & Company, Chicago, since January, 1943. He was Assistant Director, American College of Surgeons, 1936-1942, associated with the Medical Service in Industry program. His IMA membership, through Central States Society, dated from May 15, 1944; his Fellowship from April 23, 1952.

WILLIAM Y. KENNEDY, M.D., at Detroit, December 30, 1952. DR. KENNEDY was graduated from the Detroit College of Medicine (now the Medical College of Wayne University) in 1913, and began practice the same year with his father. While his father was Attending Surgeon at Grace Hospital, William was made a member of the staff. In 1916 he was a Lieutenant in the Medical Corps of the 9th Regular Infantry and saw service in Mexico under General Pershing. Returning to this country, he was stationed at Fort Oglethorpe. From there he was sent to Europe, where he was a member of Doctor Lewis' Unit. He served overseas for one and a half years. Upon leaving the service, he returned to Detroit, where he specialized in industrial surgery. He was for many years surgeon for the Detroit and Cleveland Navigation Company. Besides being on the staff of Grace Hospital, he was also on the staff of Wayne Hospital.

WILLIAM BENSON MCCUTCHEON, M.D., F.A.C.S., at Durham, North Carolina, February 8, 1953. DR. MCCUTCHEON was born at Rougemont, North Carolina, November 19, 1897; attended Durham High School, Trinity Park Prep. School, and Duke University, and received his M.D. at the Medical College of Virginia in 1921. He was Surgeon for local industries, Travelers and other insurance companies, and Seaboard Air Line. He had been a member of IMA since 1937; a Fellow since 1941. He was also a member of the AMERICAN ASSOCIATION OF RAILWAY SURGEONS.

WESTERN INDUSTRIAL MEDICAL ASSOCIATION has sent a contribution to the American Foundation of Occupational Health in memory of EDWIN HODGE CRABTREE, M.D., 1255 Third Avenue, San Diego 1, California, who died on December 1, 1952. Born in Madisonville, Kentucky, on May 2, 1886, DR. CRABTREE received his M.D. at the University of Michigan in 1912. He had been Police Surgeon of San Diego since 1915, and was Chief Surgeon of the San Diego Gas & Electric Company, the Railway Express Agency, and other concerns. He became a member of IMA in 1930.

DR. ARTURO CASTIGLIONI, 78, noted scholar and former staff member of the Yale School of Medicine, at Milan, Italy, January 21, 1953. DR. CASTIGLIONI was at Yale for seven years, from 1940 to 1947, serving as a research associate in the history of medicine and a lecturer in that field. He returned to Europe after having left the university. A native of Trieste, he received his medical degree from the University of Vienna in 1896. He served as chief medical officer of the Austrian Lloyd Steamship Line from 1899 to 1918, and later with the Lloyd Triestino and the Italian Line until 1938. Most of his life was spent in Trieste, where he collected an extensive library of more than 20,000 volumes. These were confiscated by the Nazis during World War II and never recovered. A Renaissance scholar as well as a medical historian, DR. CASTIGLIONI wrote the "History of Medicine," which has been translated into six languages. He held chairs in the history of medicine at Siena, Padua, and Perugia in Italy.

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1. Bowers, W. F.: Am. J. Surg. *73*:37, 1947.
2. Pollock, L. J., and others: J. A. M. A. *146*:1551 (Aug. 25) 1951.
3. Niemire, B. J.: Journal Lancet *71*:364, 1951.
4. Lowry, K. F.: Postgrad. Med. *11*:523, 1952.
5. Combes, F. C.; Zuckerman, B., and Kern, A. B.: New York State J. Med. *52*:1025, 1952.

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Industrial Medical and Related Chronology selected and arranged by ROBERT T. LEGGE, M.D., F.A.C.S., Berkeley, California

The powers of man have not been exhausted. Nothing has been done by him that cannot be better done. There is no effort of science or art that may not be exceeded; no depth of philosophy that cannot be deeper sounded; no flight of imagination that may not be passed by strong and soaring wing. —Source Unknown

♈ = Aries — March 21-April 19 | ♉ = Taurus — April 20-May 20

1953 APRIL (Circa)

1912—L. I. Harris, Department of Health, City of New York, investigated mercurialism in felt hat industry.
1912—G. L. Apfelbach, of Chicago, described symptoms of aniline poisoning.
1914—U.S. Public Health Service, Washington, D.C.—first studies in industrial hygiene—pulmonary diseases in miners in Joplin, Missouri—by Dr. A. J. Lanza and Edwin Higgins. First time x-ray of chest was used as a group study.
1919—Clarence D. Selby, Detroit, prepared a standardized physical examination form—adopted in 64 major plants in U.S.; made the first nation-wide survey of medical and surgical facilities in industrial establishments.
1924—C. O. Sappington, of Chicago, for his Harvard thesis for his Dr. P.H. degree, covered five years' experience in a large plant, showing that sickness causes 20 times more absenteeism than accidents and is responsible for seven times as much loss of time from work.
1937—W. D. McNally, of Chicago, published his tome on "Toxicology."
1937—Loyal A. Shoudy, of Bethlehem Steel Company, and Anna M. Baetjer, of Johns Hopkins, published their researches on "Heat and Muscular Work."

☽ 1st Quar. ○ Full Moon ☾ 4th Quar. ● New Moon

1 ♈ W — 1894—Brown Sequard, noted French physiologist, Professor of Experimental Physiology, College of France, experimenter on the use of testicular extracts, died at Paris.
"Boil your water and bury your dung"—Aristotle to Alexander the Great

2 ♈ Th — 1952—George W. McCoy, Medical Director, USPHS, Professor Emeritus, University of Louisiana, renowned for his researches on leprosy, plague, and tularemia, and winner of Sedgwick Medal, died at the age of 75.
"He jests at scars that never felt a wound"—Shakespeare

3 ♈ Fr — 1764—John Abernethy, surgeon at St. Bartholomews Hospital, born in London. Was first to ligate the iliac artery for aneurysm.
"A healthy body is a great chamber for the soul; a sick body is a prison"—Francis Bacon

4 ♈ Sa — 1952—Martin Rubin, of Georgetown University, reported before the American Chemical Society regarding calcium E.D.T. in experimental lead poisoning.
1774—Oliver Goldsmith, the Irish-born Englishman of letters, and physician, died.

5 ♈ S — 1883—Joseph K. Barnes died at Washington. Surgeon General, U.S.A., attended Abraham Lincoln at the time he was dying from an assassin's bullet wound.
1827—Joseph Lister, father of antiseptic surgery, born at Exxes. Professor of Surgery, University of Glasgow.

6 ☾ M — 1806—Hugh H. Toland born at Guilder Creek, South Carolina. A graduate of Transylvania, he migrated to San Francisco and founded Toland's Medical College which later became the Medical School, University of California.
"After dinner either rest or walk a mile"—Salernitanum

7 ♈ Tu — 1859—Henry E. Sigerist, Professor of Medical History at Johns Hopkins, distinguished medical historian and author, born in Paris. Recipient of the W. H. Welsh Medal.
"God made the Negro black to keep out the ultra-violet rays"—Fisher

8 ♈ W — 1855—Robert Prosser White, pioneer English industrial dermatologist, born. First president, London Dermatological Society, and Certifying Factories Association.
"When two men in a business always agree, one of them is unnecessary"—William Wrigley, Jr.

9 ♈ Th — 1553—Francois Rabelais, French humorist, priest and physician, author of "Gargantua and Pantgruel," died at Paris.
"Regardless of advances made, effective treatment will continue to depend on knowing the patient and his environment"—Reveno

10 ♈ Fr — 1872—Bernardo A. Houssay, Buenos Aires physiologist, born. Recipient of Nobel Prize in 1947 for his researches on the pituitary glands.
"Kindness warms our hearts as fire warms our bodies"—Voltaire

11 ♈ Sa — 1859—Jacques Loeb, distinguished German-American physiologist and head of the experimental biology at Rockefeller Institute, born in Germany.
"There's no harm in having nothing to say. Just try not to say it out loud"—Changing Times

12 ♈ S — 1879—William Irving Clark, Medical Director, Norton Company, Worcester, Massachusetts, and Associate Professor of Industrial Hygiene at Harvard, born in New York.
"The world will right itself; take the long view and you are comforted"—Lin Yutang

13 ● M — 1858—A. J. Ochsner born at Baraboo, Wisconsin. Professor of Surgery, University of Illinois; Chief at Augustana Hospital; founder of A.C.S.
1817—Charles Edward Brown Sequard born at Port Louis, Mauritius. Celebrated physiologist and endocrinologist.

14 ♈ Tu — 1883—William Farr, M.D., F.R.S.C.B., died in his 76th year at London. He laid the foundation of a new science of vital statistics in its relation to public health.
"Fool me once, shame on you; fool me twice, shame on me"—Chinese Proverb

15 ♈ W — 1857—Victor A. H. Horsley, famous English brain surgeon, born at Kensington, London. Noted for his researches on localization of the function of the brain.
1948—Rupert Blue, Surgeon General, USPHS, died at Charleston, South Carolina, at the age of 80.

16 ♈ Th — 1930—Linda Richard, died at the New England Hospital where in 1872 she received her diploma as the first graduate nurse in America.
"Nothing so needs reforming as other people's habits"—Mark Twain

17 ♈ Fr — 1891—Martha M. Eliot born at Dorchester, Massachusetts. For 35 years she was with the Children's Bureau, Washington, then was appointed Assistant Director General WHO.
1912—Clara Barton, founder of American Red Cross, died.

18 ♈ Sa — 1873—Baron Justus von Liebig, distinguished German chemist, died at Munich.
1874—David Livingston, the great African medical explorer, laid to rest in Westminster Abbey, London.
"It is magnificent to grow old, if one keeps young"—Foodick

19 ♈ S — 1906—Pierre Curie, the French scientist and co-discoverer of radium (Nobel Prize 1903) killed by being run over in Paris.
"It is excusable for a physician to fail in acute rather than in chronic diseases"—Celsus

20 ☽ M — 1745—Phillip Pinel, a French physician, born at St. Andre. Director of Salpetriere; pioneer in improvement of the treatment of insane. "He removed the chains."
"It took a minute to cut off that head, though a hundred years will be required to produce another like it"

21 ♉ Tu — 1854—Adolph Lorenz, Austrian orthopedic surgeon, born in Silesia. Noted for his bloodless operation in the reduction of congenital hip joint dislocation.
1887—Freiderich Loeffler (1852-1910), of Frankfort on the Oder, announced the discovery of diphtheria organisms.

22 ♉ W — 1891—David Bruce Dill, Professor of Industrial Physiology at Harvard, born in Eakridge, Kansas. Distinguished in research on fatigue, altitude, and heat effects.
"Physicians are many in title but few in reality"—Hippocratic Canon

23 ♉ Th — 1951—Lewis H. Sarett, of the Merck Research Laboratory, awarded the Baekeland Gold Medal and $1,000 for his outstanding researches on the synthesis of cortisone.
"The art of medicine is to be properly learned only from its practice and exercise"—Sydenham

24 ♉ Fr — 1952—Charles G. Farnum, M.D., died at Peoria, Illinois, at the age of 77. One of the founders of the I.M.A.; Director of National Safety Council.
"Tis a sordid Profit that's accompany'd with the Destruction of Health"—Ramazzini

25 ♉ Sa — 1853—William Beaumont died at St. Louis, Missouri, from a carbuncle on his neck. Ex-U.S.A. surgeon who published his gastric digestion experiments on Alexis St. Martin observed through a gunshot fistula in his stomach.
"A gentleman never heard the story before"—O'Malley

26 ♉ S — 1951—The American Association of Industrial Physicians and Surgeons changed its name to the Industrial Medical Association.
1558—Jean Fernel, surnamed the Modern Galen, a noted French professor of medicine, died at Paris.

27 ♉ M — 1891—Miss Mary E. Garrett, member of the Baltimore Women's Committee Fund, Johns Hopkins Medical School, offered to complete the necessary sum to open the school on the stipulation that women be admitted on the same basis as men.

28 ☽ Tu — 1872—William Wood Gerhard, distinguished Philadelphia physician, died.
"Acquire the art of detachment, the virtue of method, and the quality of thoroughness, but above all the grace of humility"—Osler

29 ♉ W — 1891—John LeConte, physician and learned professor of natural philosophy, a founder of the University of California and its president, died at Berkeley, California.
"He who cannot classify diseases as to genera and species will be deceived as to therapeutic indications"—Galen

30 ♉ Th — 1934—William H. Welch, professor of pathology at Johns Hopkins, died at Baltimore.
"To be seventy years young is sometimes far more cheerful and hopeful than to be forty years old"—Oliver Wendell Holmes

"About the saddest commentary on the modern state of near chaos is that there are too many men making history who have never read any"—Alfred R. Sugg

when all depends on BALANCE

No single nutritional element can function except in conjunction with other nutrients in constant and harmonious balance.

VITERRA assures a uniform daily supply of all Vitamins, Minerals and Trace Elements essential to establish and maintain correct nutritional balance, whenever balanced supplementation is indicated.

each capsule contains

Vitamin A	5,000 U.S.P. Units
Vitamin D	500 U.S.P. Units
Vitamin B 12	1 mcg.
Thiamine Hydrochloride	3 mg.
Riboflavin	3 mg.
Pyridoxine Hydrochloride	0.5 mg.
Niacinamide	25 mg.
Ascorbic Acid	50 mg.
Calcium Pantothenate	5 mg.
Mixed Tocopherols (Type IV)	5 mg.
Calcium	213 mg.
Cobalt	0.1 mg.
Copper	1 mg.
Iodine	0.15 mg.
Iron	10 mg.
Manganese	1 mg.
Magnesium	6 mg.
Molybdenum	0.2 mg.
Phosphorus	165 mg.
Potassium	5 mg.
Zinc	1.2 mg.

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J. B. ROERIG AND COMPANY, 536 LAKE SHORE DRIVE, CHICAGO 11, ILL.

planning a dispensary?

...let Aloe help you

A. S. Aloe Company has a fully staffed planning department to help you with layouts and suggested equipment lists for a dispensary of any desired size. There is, of course, no obligation on your part for our complete evaluation of your needs. Wherever your plant may be located, Aloe service and merchandise are standard; you are therefore assured of uniformity of quality and specifications. Illustrated below is a model dispensary consisting largely of Aloe exclusive equipment. Cabinets shown are the famous Moduline —Aloe exclusive steel sectional equipment, which, unlike custom-built fixed equipment, is capable of future rearrangement or expansion, or may be readily moved to new location. Moduline users include: Caterpillar Tractor, Cadillac, American Telephone & Telegraph Co. In planning a dispensary it is an important advantage that all equipment be available from one source. Please write for complete details.

a. s. aloe company *AND SUBSIDIARIES* • 1831 Olive St. • St. Louis 3, Mo.

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new!

Plasticized protective skin cream

Greaseless... Long-Lasting... Not Removed by Washing

PREVENTIVE THERAPY FOR

* *Occupational Dermatoses*
* *Non-Industrial Dermatoses of Allergenic Origin*
* *Inflammation from Body Fluids*
* *Lesions Irritated by Scratching*
* *Sensitivity to Any Environmental Substance*

UNIQUE in formula and manufacture, COVICONE Cream is a special *plasticized* combination of silicone (dimethylpolysiloxane), nitrocellulose and castor oil suspended in a greaseless vanishing cream base. When applied to the skin, it forms an invisible, imperceptible film which provides effective protection from a variety of sensitizing or irritating substances.

Because the protective coating is not destroyed by normal washing of the skin, COVICONE is ideally suited to treatment of occupational and allergic dermatoses, where prolonged or continuous protection is desired. Initially, COVICONE is applied twice daily for 10 days to two weeks, after which effective protection can be maintained indefinitely with applications at daily or less frequent intervals. Now available at pharmacies, COVICONE is supplied in one-ounce tubes and one-pound jars.

Abbott

COVICONE

TRADE MARK

CREAM

(Abbott's Protective Skin Cream)

1-142

more complete relief of "common cold" symptoms

assured prevention of secondary bacterial infections

COMPARISON OF COMPLETE CURES*

	Severe Cases†	Total Cases
A-P-Cillin Treated (44% were severe)	56%	59%
"APC"-antihistamine Treated (21% were severe)	0%	8%
"APC" Treated (24% were severe)	0%	6%

(from McLane, R.A.: J.M. Soc. N.J. 49:509 (Dec.) 1952.)

*Asymptomatic at end of 72 hour treatment period.

†Temperature over 100°F. with other symptoms of acute upper respiratory infection.

with this new therapeutic combination

White's

A-P-Cillin

A recent clinical evaluation* of the effectiveness of certain drug combinations in acute upper respiratory infections, including the "common cold," clearly demonstrated A-P-Cillin to be, by far, the superior preparation.

It was found that 97.5% of the patients receiving A-P-Cillin were completely asymptomatic or improved at the end of the 72 hour treatment period.

Other commonly used preparations brought only 54% and 47% relief by the end of the same period.

To relieve distressing nasopharyngeal and constitutional symptoms, and to prevent secondary upper respiratory complications, prescribe—

White's A-P-CILLIN

Each Tablet contains:

Procaine Penicillin G		100,000 units
APC	Acetylsalicylic acid	2½ gr.
	Phenacetin	2 gr.
	Caffeine	½ gr.
Phenyltoloxamine Dihydrogen Citrate (antihistamine)		25 mg.

The usual adult dose of A-P-Cillin is 2 tablets administered three times per day. Clinical experience indicates that treatment should be continued for not less than seventy-two hours. For optimal effect, the tablets should be taken at least one hour before or two or more hours after meals.

White Laboratories, Inc., Kenilworth, N. J.

*McLane, R. A.: Clinical Evaluation of Combined Drug Therapy in Acute Upper Respiratory Infections, J. M. Soc. N. J. 49:509 (Dec.) 1952.

PHENERGAN®

EXPECTORANT TROCHES

WITH CODEINE

Relieve throat irritation quickly, gently, pleasantly. Your patients secure the benefits of PHENERGAN, long-acting antihistamine with local anesthetic action, plus an effective sedative-expectorant prescription formula, in pleasantly flavored hard-candy form.

Formula: Each troche contains:

Codeine Phosphate (1/8 gr.)	8 mg.
Phenergan Hydrochloride	1.5 mg.
Powdered Extract Ipecac	2.3 mg.
Potassium Guaiacolsulfonate	162 mg.

in a pleasantly flavored candy base

Wyeth®
Philadelphia 2, Pa.

unusually effective in infections
of the gastrointestinal tract...

Chloromycetin®

is indisputably the drug of choice
in typhoid fever and is considered by many
to be useful in other salmonelloses

outstanding in acute Shigella dysentery, CHLOROMYCETIN permits immediate treatment regardless of dehydration and provides rapid relief.

exceptionally well tolerated, CHLOROMYCETIN (chloramphenicol, Parke-Davis) is noted for the infrequent occurrence of even mild gastrointestinal side effects, an important consideration in treating infections of the gastrointestinal tract. Although serious blood disorders following its use are rare, it is a potent therapeutic agent, and should not be used indiscriminately or for minor infections — and, as with certain other drugs, adequate blood studies should be made when the patient requires prolonged or intermittent therapy.

Chloromycetin is a notably effective, well tolerated, broad spectrum antibiotic

Parke, Davis & Company
DETROIT, MICHIGAN

when psychic stress

is the underlying cause of

BACK PAIN or HEADACHE

Edrisal* relieves the psychic stress

Edrisal's Benzedrine† component improves the patient's mood and creates a sense of well-being, thus relieving the depression that so often is the underlying cause of pain.

'Edrisal' relieves the pain

"'Edrisal' was more effective than any other analgesic previously used..."

Wells, R. L.: M. Ann. District of Columbia *20*:360, 1951.

Each 'Edrisal' tablet contains:

'Benzedrine' Sulfate (racemic amphetamine sulfate, S.K.F.)	2.5 mg.
Acetylsalicylic acid	2.5 gr.
Phenacetin	2.5 gr.

Be sure to prescribe 2 'Edrisal' tablets per dose to assure the full benefit of the 'Benzedrine' component.

Also available, for intense pain: 'Edrisal with Codeine ¼ gr.' and 'Edrisal with Codeine ½ gr.'

Smith, Kline & French Laboratories, Philadelphia

*T.M. Reg. U.S. Pat. Off.
†T.M. Reg. U.S. Pat. Off. for racemic amphetamine sulfate, S.K.F.

oral penicillin which can be given with meals

PERMAPEN ORAL SUSPENSION

Palatable, easy-to-take peach-flavored Permapen Oral Suspension will maintain constant demonstrable blood levels of penicillin in most patients when just one teaspoonful is given every eight hours. These blood levels are independent of the relation of dosage to meals—in fact, Permapen may be given with meals without loss of efficacy.

Supplied: 2 fl. oz. bottles, 300,000 units per 5 cc. teaspoonful.

Permapen*

(BRAND OF DIBENZYLETHYLENEDIAMINE DIPENICILLIN G)

intramuscular penicillin which gives most prolonged blood levels

PERMAPEN AQUEOUS SUSPENSION

Free-flowing, easy-to-give Permapen Aqueous Suspension can eliminate the Streptococcus carrier state in most rheumatic fever patients because just one injection will produce demonstrable blood levels in almost all patients for 14 days or longer—levels prolonged far beyond those attainable with other penicillin compounds.

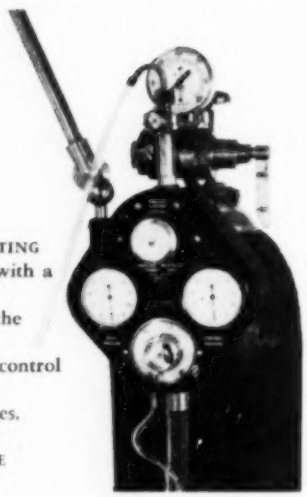
Supplied: In sterile, single-dose disposable Steraject* cartridges, 600,000 units each, with foil-wrapped, sterile needle.

*TRADEMARK, CHAS. PFIZER & CO., INC.

ANTIBIOTIC DIVISION Pfizer CHAS. PFIZER & CO., INC. BROOKLYN 6, N. Y.

for successful treatment of acute and chronic pulmonary disorders

the BENNETT PRESSURE BREATHING THERAPY UNIT



DESIGNED TO PROVIDE SAFE, EFFECTIVE BREATHING assistance with simultaneous bronchodilator or antibiotic aerosol administration in all types of acute and chronic respiratory insufficiency.

RESPIRATORY ASSISTANCE IS ACCOMPLISHED BY ACTIVELY INFLATING the lungs under safe controlled pressure during inspiration with a resulting increase in depth and volume of breathing, then allowing free exhalation without pressure. The unique features of the truly flow-sensitive Bennett Valve makes this the ideal treatment unit for intermittent positive pressure breathing. Complete patient control of breathing rate and rhythm is maintained at high or low rates of flow, thus achieving deep, effective breathing even in advanced cases.

EXTENSIVE CLINICAL DATA AND RESEARCH PAPERS SUBSTANTIATE the good results obtained in a high percentages of cases treated with the Bennett Unit. Effective relief from dyspnea, together with physiological therapy has been accomplished in both acute and chronic respiratory complications. These include emphysema, bronchiectasis, silicosis, asthma, atelectasis, cor pulmonale, pulmonary fibrosis, pulmonary edema, poliomyelitis, some cardiac conditions, barbiturate poisoning, post-operative complications, and other conditions involving insufficiency of respiratory ventilation. Now widely used by doctors, hospitals, and many individual patients.* Information, descriptive literature, and reprints available on request.

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*Note: units sold only on the prescription or order of a physician or a qualified hospital or institution.

1682 brings special finesse to skin suturing

Your patient often judges your operation by the appearance of the skin incision and the final scar. With D & G's product 1682, you accurately coapt the skin edges of a wound on the face, neck, breast or extremities and are sure of minimal scarring.

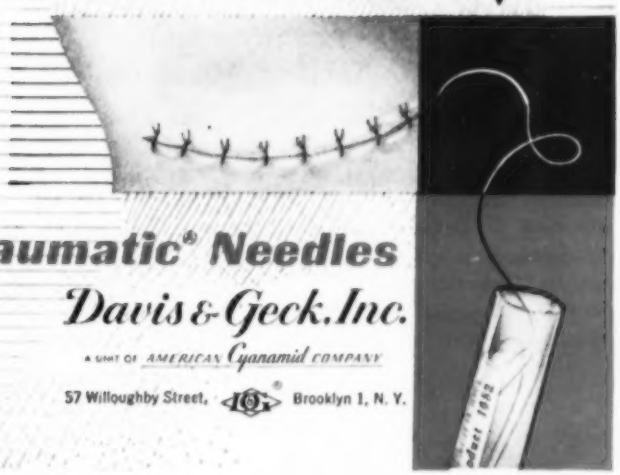
1682 is the D & G Dermalon® monofilament nylon suture with attached ATRAUMATIC® needle CE-4 (3/8 circle cutting point).

Dermalon nylon sutures . . .

- have the excellent tensile strength of nylon
- are easily removed, with little pain
- cause minimal tissue reaction
- have a distinctive blue color to make them easily discernible

Ask your suture nurse to have Davis & Geck's product number 1682 ready for all skin closures. Keep product 1682 in sizes 6-0 to 00 on hand for closing traumatic and minor surgery wounds at the office. D & G Atraumatic needles come to you in over 300 needle-suture combinations.

Product No. 1682 Dermalon suture with attached Atraumatic needle CE-4 (3/8 circle cutting point) Needle shown actual size ▼



Atraumatic® Needles

Davis & Geck, Inc.

A UNIT OF AMERICAN Cyanamid COMPANY

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for Symptomatic relief of Bronchospasm

. . . the M·S·A PULMONARY VENTILATOR

Here's a modern instrument designed *specifically* for intermittent positive pressure therapy. Clinically proved, the M.S.A. Pulmonary Ventilator assures effective distribution of aerosols, such as bronchodilators and bacterio-static agents, throughout the respiratory tract. The unit can be used on any standard oxygen cylinder. Its ease of operation permits quick and efficient application in hospitals, doctors' offices, or in the patient's home under the physician's directions.

Our bulletin describes the instrument's many uses in inhalational therapy—operating features—ease of maintenance. Write for your copy today. Price of M.S.A. Pulmonary Ventilator with mouthpiece assembly and Nebulizer attachment—$195.00.

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At Your Service:
82 Branch Offices in the United States and Canada

a sounder basis
for the treatment of skin disorders...

NEW

Prophyllin® Wet Dressing

avoids treatment dermatitis

Wet dressings are highly recommended for their marked freedom from irritation and their beneficial effect in a wide variety of dermatoses. Now, PROPHYLLIN provides sodium propionate and water-soluble chlorophyll to increase the safety and efficacy of this preferred mode of therapy.

- more physiologic
- nonastringent, nontoxic
- nonirritating, nonsensitizing
- relieves itching and irritation
- mildly bacteriostatic and fungistatic

...as condition improves
the benefits of PROPHYLLIN Wet Dressing can be maintained by prescribing
PROPHYLLIN OINTMENT

PROPHYLLIN Powder, for preparation of wet dressings, in cartons of 12 packets. Each packet contains 2.3 gm. powder, sufficient to prepare 8 ounces of solution containing 1 per cent sodium propionate and 0.0025 per cent water-soluble chlorophyll. Also 4-oz. and 16-oz. jars. Note: *When dissolved*, PROPHYLLIN is free of propionate odor.

PROPHYLLIN Ointment, 1½-oz. and 4-oz. tubes. PROPHYLLIN Ointment contains 5 per cent sodium propionate and 0.0125 per cent water-soluble chlorophyll.

Rystan company inc.
Mount Vernon, New York

B R E C K

FOUR WAYS TO PROTECT SKIN FROM INDUSTRIAL DERMATITIS

BRECK pH7 PROTECTIVE CREAM protects the hands against irritants such as lubricating oils, cutting compounds, tar, greases, rubber dust, aromatic and hydrocarbon solvents, fiberglass, paint and iron dust. It forms a non-sticky, invisible film over the skin. Breck pH7 Protective Cream is easily applied. It is easily removed with Breck Hand Cleaner or soap and water.

BRECK WATER RESISTANT CREAM protects the skin against the action of water and water solutions such as liquid coolants, emulsified cutting oils, mist and spray from alkali baths and plating solutions, cement and lime. It covers the skin with a light, protective film which is not slippery or sticky. Breck Water Resistant Cream has a pH value of 8.

BRECK HAND CLEANER helps eliminate the use of harsh, gritty, highly alkaline or defatting hand cleaners. It does a thorough cleansing job, yet is mild and non-irritating to the skin.

BRECK WORK CREAM is used after exposure to degreasing materials and at the end of a day's work. It substitutes fatty materials for the natural skin oils which have been removed. In this way Breck Work Cream helps keep the hands smooth, pliable and lubricated.

A Breck Industrial Preparations Booklet will be forwarded to you upon request.

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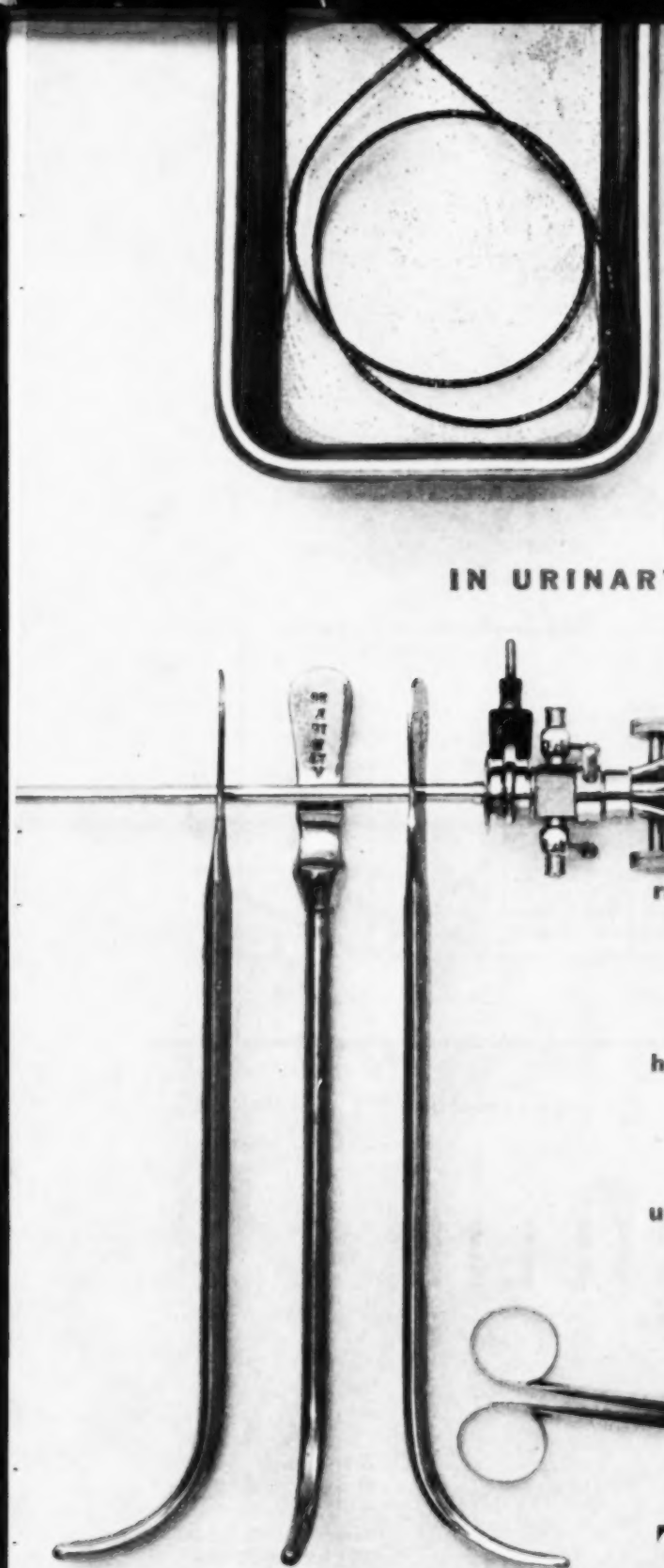


IN URINARY TRACT INFECTIONS

rapid response

"Patients with pyelitis were well and doing their usual duties within 24 hours . . ."[1] ". . . resistant cases showed remarkable response."[2]

high urine levels

"Terramycin was selected . . . in view of high urinary excretion rate following small oral doses of the antibiotic."[1]

unexcelled toleration

"Terramycin is generally well tolerated, the percentage of relapses being low and the percentage of bacteriological as well as clinical cures high."[3]

1. Canad. M. A. J. 66:151 (Feb.) 1952.
2. J. Urol. 67:762 (May) 1952.
3. Ibid. 69:315 (Feb.) 1953.

Terramycin

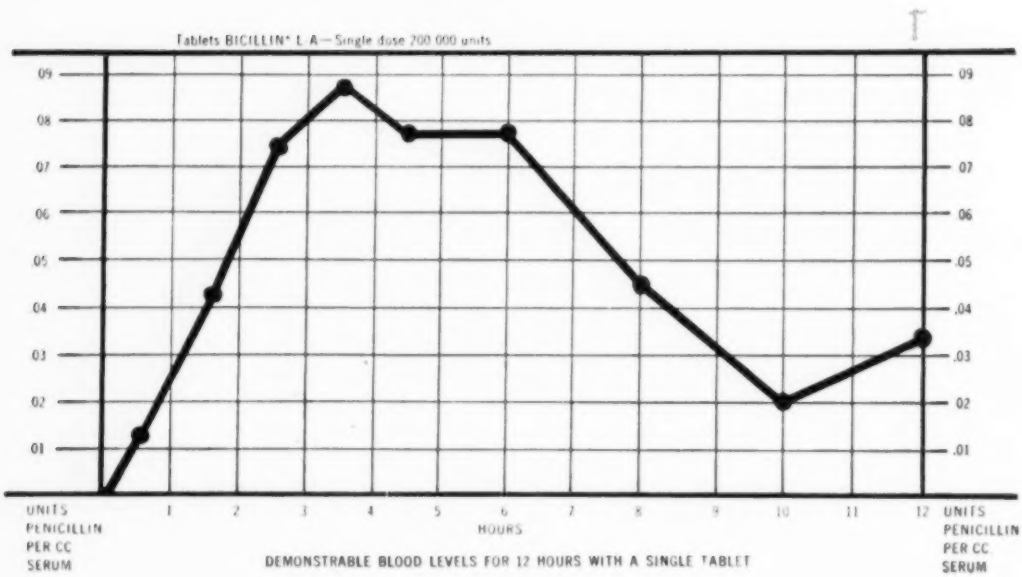
Brand of Oxytetracycline

Pfizer

NOW . . .

only **2** *tablets daily*

for effective,
continuous
oral penicillin tablet therapy



DEMONSTRABLE BLOOD LEVELS FOR 12 HOURS WITH A SINGLE TABLET

Tablets

Wyeth
Philadelphia 2, Pa.

BICILLIN®

(Long-Acting)

BENZETHACIL

Dibenzylethylenediamine dipenicillin G

Supplied:
Pink, scored tablets containing
200,000 units per tablet. Bottles of 36.

Also Available:
Oral Suspension Bicillin
Injection Bicillin *L-A*
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Bicillin-Sulfas Tablets

Upjohn

mixed surface infections . . .

Each gram contains 5 mg. neomycin sulfate (equivalent to 3.5 mg. neomycin base).

Available: Ointment in ½ oz. and 1 oz. tubes, and 4 oz. jars. Cream in ½ oz. tubes.

The Upjohn Company, Kalamazoo, Michigan

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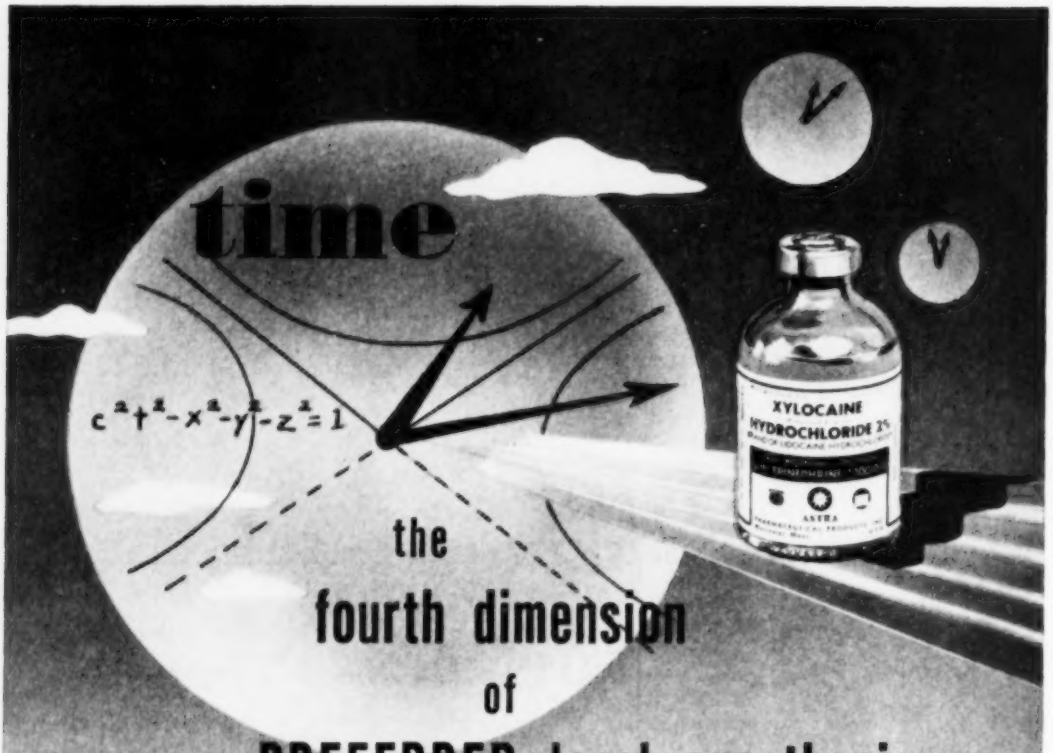
Trademark Reg. U. S. Pat. Off.

CREAM OR OINTMENT



the fourth dimension of PREFERRED local anesthesia

Xylocaine® Hydrochloride (Astra) merits special consideration by the busy anesthesiologist and surgeon. Profound in depth and extensive in spread, its well-tolerated effect is more significantly measured by the time saved through its remarkably fast action, by which so much normally wasted "waiting time" is converted to productive "working time".

Stocked by leading wholesale druggists and surgical supply houses as a ½%, 1% or 2% solution without Epinephrine and with Epinephrine 1:100,000. 2% solution is also supplied with Epinephrine 1:50,000. All solutions dispensed in 50cc. and 20cc. multiple dose vials, packed 5x50cc. or 5x20cc. to a carton.

XYLOCAINE® HCL

Pronounced Xī lo'cain

(Brand of lidocaine *HCL)

AN AQUEOUS SOLUTION

A 4th dimensional approach to preferred local anesthesia

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WORCESTER, MASS. U.S.A.

*U.S. Patent No. 2,441,498

Only ONE of these elastic bandages lets you control the pressure

it's TENSOR® Elastic Bandage because it's woven with live rubber threads

Tensor Elastic Bandage, as the photo clearly shows, has *twice* the elasticity of ordinary old-style all cotton bandages —and it snaps back all the way. Naturally—Tensor is woven with live rubber threads—not just cotton.

That's why Tensor enables you to apply *low* pressure as easily as higher pressures.

Pressure is *uniform*—with less danger of hyperconstriction —more comfort, more mobility for patients.

And you don't have to adjust Tensor as swelling goes up or down. Tensor adjusts itself.

You, doctor, not the bandage, control pressure—when it's a Tensor.

TENSOR®

ELASTIC BANDAGE

Woven with live rubber threads

BAUER & BLACK

Division of The Kendall Co.
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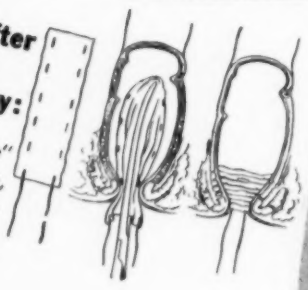
Under equal tension

Tensor stretches approximately twice as far as old-style cotton bandages. And Tensor will snap back smoothly to its original length. That's why Tensor gives greater control of pressure, requires no adjustment, is more comfortable to wear.

PACKING as for abscess cavity:

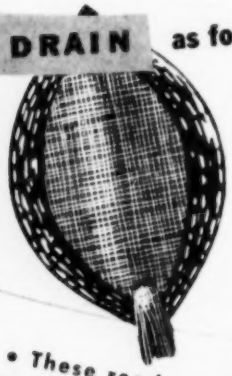
Cavity is fully but not tightly packed to permit healing from the bottom — and is repacked weekly, using aseptic precautions.

PLUG as after **hemorrhoidectomy:**



Petrolatum gauze "sponge" is (a) threaded as shown, (b) inserted beyond sphincter, (c) and then pulled down snugly against bleeding points.

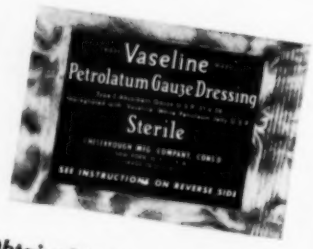
DRAIN as for septic wounds:



Non-toxic, non-adherent, non-macerating—will not cause pressure necrosis or erosion...increasingly used in place of rubber drainage tubes.

• These ready-made dressings now available in three sizes:

No. 1: 3" x 36" (6 in carton)
No. 2: 3" x 18" (12 in carton)
No. 3: 6" x 36" (6 in carton)



Obtainable from your regular source of supply

Specified for "1001" SURGICAL USES

Vaseline

TRADE MARK

Sterile Petrolatum Gauze Dressings

Adopted as standard procedure by surgeons, as preferred matériel by ORS's and CSS's, these superior dressings are used as wound coverings and packings, as plugs and drains—as well as being the most widely-used definitive dressing for burns and abrasions.

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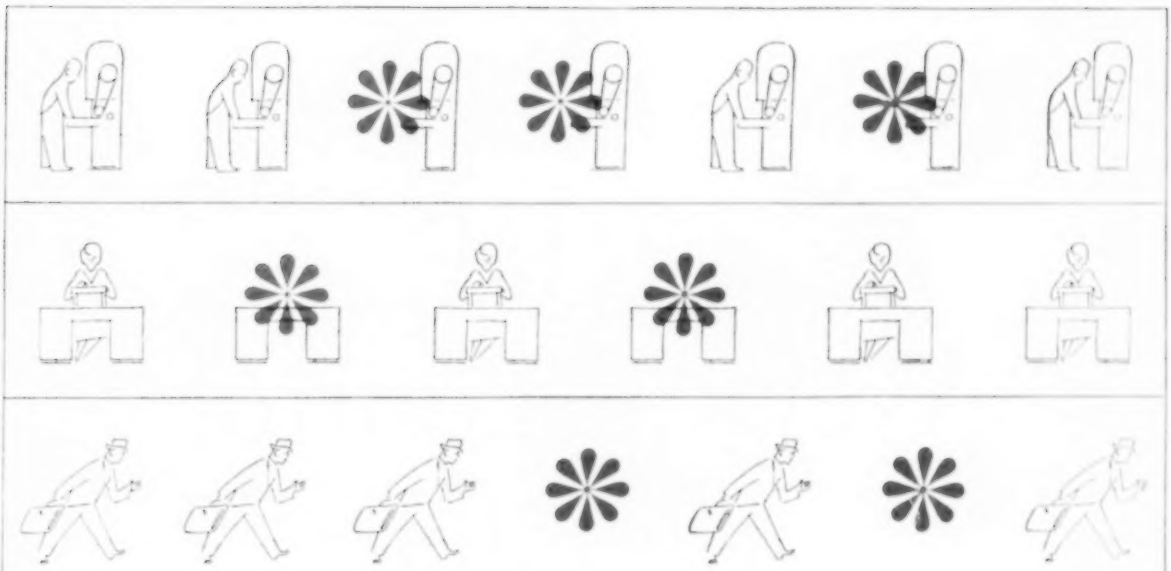
Professional Products Division
NEW YORK 4, N. Y.

Insist on these superior ready-made, dependably sterile dressings—for your use in indicated surgery, major or minor, emergency or elective.

VASELINE is the registered trade-mark of the Chesebrough Mfg. Co., Cons'd



✳ WHEN ACUTE MUSCLE SPASM PULLS WORKERS OFF THE JOB

PHYATROMINE-H, a safe, effective cholinergic preparation, relieves muscle spasm and pain in 10 to 30 minutes... keeps a high percentage of workers on the job during therapy. Clinical studies[1-5] have established the outstanding effectiveness of physostigmine, combined with atropine-like drugs, in reducing pain and disability due to industrial injuries, arthritis, etc.

l-Hyoscyamine "pinpoints" the therapeutic action of physostigmine by counteracting its unwanted muscarinic effects without impairing its action on skeletal muscle. More potent than atropine, l-hyoscyamine may be used in smaller doses, thus minimizing atropine-like side-effects.

Each cc. contains:
Physostigmine Salicylate ..... 0.6 mg.
l-Hyoscyamine Hydrobromide ..... 0.3 mg.
In isotonic sodium chloride solution

STABLE... READY TO INJECT... WELL TOLERATED

SUPPLIED: No. 1742—1-cc. ampuls, boxes of 25; 30-cc. multiple-dose vials.

Complete Literature on Request

REFERENCES: 1. Marshall, W., and Schildberg, W.: Insurance Index 14:82, 1952. 2. Stein, Journal-Lancet 70:391, 1950. 3. Stallman, A. H.: Wisconsin M. J. 49:1021, 1950. 4. Stein, Indust. Med. & Surg. 20:207, 1951. 5. Shipkin, S. M.: Texas Pr.Sci. 1951.

Ethical Pharmaceuticals Since 1894

KREMERS-URBAN COMPANY

LABORATORIES IN MILWAUKEE

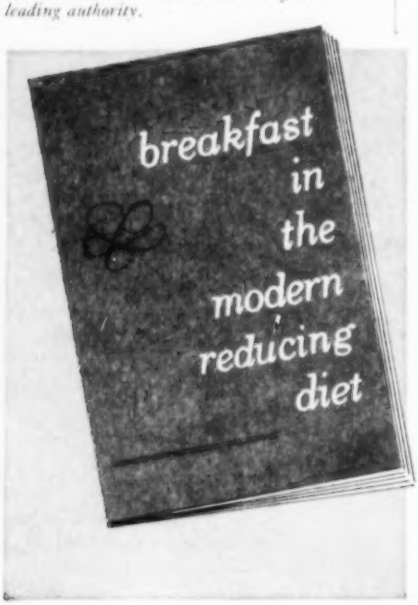
CUT MAN-HOUR LOSS WITH

PHYATROMINE®-H

[Brand of Physostigmine Salicylate and l-Hyoscyamine Hydrobromide • Kremers-Urban]

FREE Weight Control Booklet

MEMO—*this booklet is based on current research and is edited by a leading authority.*



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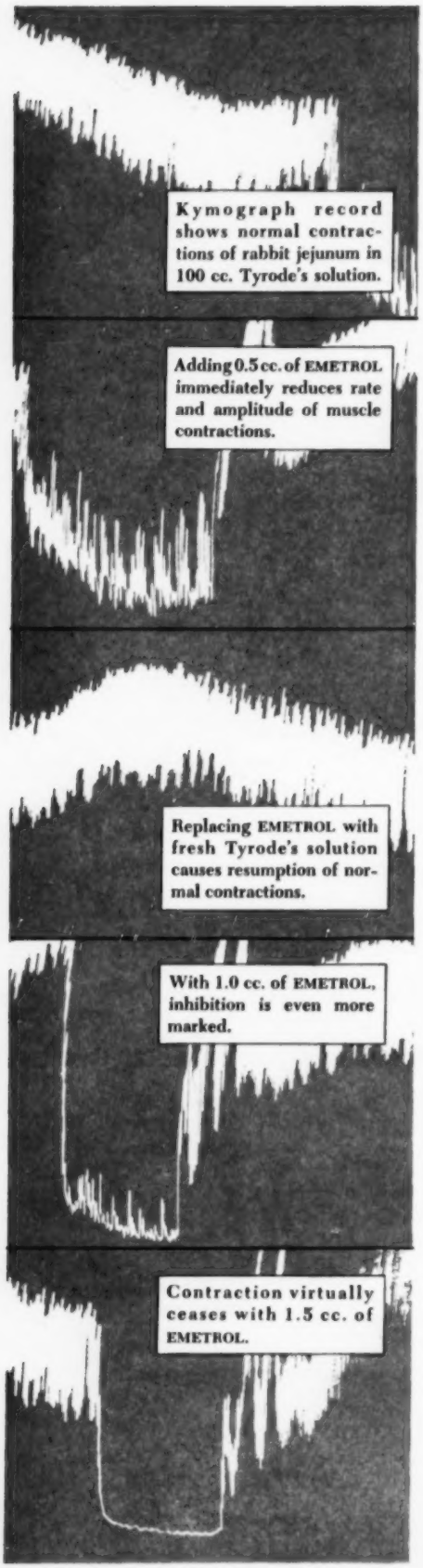
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INDUSTRIAL MEDICINE AND SURGERY

APRIL, 1953

The Phenomenon of Accident Proneness

A. G. ARBOUS and J. E. KERRICH

IN THE PAST accidents were attributed to bad luck or the visitations of some unpropitious deity. Today they are regarded as a social problem. Several factors have combined to reorientate our thinking in this regard, and it is appropriate that the study of accidents should be made against the background of significant changes which have taken place in our mental attitudes during the past quarter-century....

The wider acceptance of psychology as a science, and the consequent development of psychosomatic medicine have led to a deeper appreciation of the possible causes of accidents. These occurrences are no longer regarded as inescapable by-products of our mechanical age which have to be accepted in a spirit of fatalism. As man has become more willing to apply scientific techniques to the study of his own behavior, his attitude to this phenomenon has undergone considerable change. Accidents are no longer regarded as entirely fortuitous events and the inevitable price to be paid for technological advancement. Events which were previously considered to be chance-determined are now regarded as preventable, and causes which were hitherto regarded as beyond the control of the individual are now seen in many cases as intimately related to his psycho-physiological make-up. It is not a question of the blame being shifted from the environment to the individual, but rather an appreciation that what really matters is the degree of adjustment which exists between the two. Our appreciation of the wide range of individual differences which exist in man has led to the natural conclusion that considerable improvement can be effected in human adjustment by a more careful consideration of those aspects of the environment which are man-made, and also the varying degrees of skill, mental ability, physical constitution, temperamental and personality qualities with which individuals are equipped. As a result accidents are today more often regarded as problems of human adjustment, or as manifestations of maladjustment.

THIS *presentation, which conceivably might have been entitled "Exit Accident Proneness," or at least "Changing Concepts of Accident Proneness," represents a condensation, by a succession of excerpts, of two lengthy articles by* A. G. ARBOUS *and* J. E. KERRICK, *National Institute for Personnel Research, South African Council for Scientific and Industrial Research, first published in* Biometrics *(7:4, 341 (December) 1951), under the title "Accident Statistics and the Concept of Accident-Proneness—Part I: A Critical Evaluation; Part II: The Mathematical Background." This condensation, which has been achieved under the authorization of the investigators, with deliberation has emphasized those sections (chiefly appearing in the first portion of the two-division publication) that stress the unlikelihood, or, perhaps better, the uncertainty, that accident-proneness is a continuing quality within human beings even to the point of inherency and scarcely susceptible of ready modification. By no means does this abridgment reflect the full coverage of the authors' total material. For this reason a reading of the full article, available in many libraries, would prove salutary*—EDITOR.

The Phenomenon of "Accident-Proneness"

PEOPLE first stumbled on this idea when it was observed that, in most work-groups studied, a minority were responsible for the majority of accidents. This spectacular observation led the unwary in the past to formulate the concept of accident-proneness as a means of explanation.

It is difficult matter to define what is meant by this term and evolve a sensible measure of whatever it indicates. Apparently it was meant to define some personal trait as opposed to some characteristic of the environment, which predisposed some to have more accidents than others in work conditions where the risk of hazard was equal to all. The term would appear to imply moreover that it is possible either (a) to differentiate clearly between two classes of people—those who are accident-prone, and those who are not; or (b) at least to be able to rank the group in terms of the severity of their proneness.

Even today, after the trenchant comments of writers like Mintz and Blum,[1] the fallacy of this line of argument, based on the distribution of

accidents in a single period of observation, does not appear to have penetrated the mind of the layman, or even of many specialists working in the field of accident prevention. It is appropriate therefore, in our study of this phenomenon that we should drive this point home by considering from an actual example the extent to which the accident-proneness concept enables one to differentiate between persons with the hope of producing beneficial results.

The implied advantage of this theory is that after having spotted who the accident-prone cases are in a group, their removal from the group should result in a decrease in the relative frequency of accidents sustained by the remainder. This objective is laudable and obvious. If it cannot be achieved there is little point in our clinging to the concept of proneness.

The fallacy of this line of reasoning is strikingly revealed by reference to an example from Adelstein's[2] data, covering the records of 104 shunters with three years' service. He reports the effect of removing cases with a high accident record in the first year of service as follows:

TABLE I.
THE ACCIDENT RATES FOR THE SHUNTERS WHO JOINED IN 1944 AND SHUNTED FOR THREE YEARS

	1st year	2nd year	3rd year
Mean accident rate for 104 men	.557	.355	.317
After removing 10 men with highest rate in 1st year, i.e., 94 remaining men	.393	.361	.329

In this case the annual accident rate in the second and third years actually went up a trifle after the removal of the 10 men who had had most accidents during the first year.

Clearly evidence of this type indicates that our conception of the term accident-proneness stands in need of a critical examination from first principles.

The significant history of the concept of accident-proneness goes back to 1919 when Greenwood and Woods,[3] and Greenwood and Yule[4] made the first thorough-going approach to the analysis of accident statistics. Their findings and conclusions were later critically examined and extended by Newbold,[5,6] in her classic contributions to the subject in 1926 and 1927. Despite the fact that these studies were made about a quarter of a century ago, they still must be regarded as almost complete summaries of our existing knowledge of this phenomenon, as little real advance has been made since that time. Anyone wishing to understand the subject of proneness cannot avoid making a detailed and comprehensive study of these works, for in them he will find not only the basic assumptions on which the concept of proneness depends, but all the essential warnings as to the limitations of these assumptions which have been so often disregarded ever since. It is an unfortunate fact that since these studies were made, it has been assumed in almost all the literature that the existence of accident-proneness is an established fact, and that it is a stable phenomenon in individual make-up which makes it worth our while attempting to predict and to use in practical accident prevention measures. Thus Farmer and Chambers (who coined the term accident-proneness) state explicitly:[7]

"Previous statistical investigations have shown that industrial workers exposed to equal risks were unequal in their liability to sustain accidents, and that this unequal liability was a relatively stable phenomenon, manifesting itself in different periods of exposure and in different kinds of accidents . . . ."

This claim would certainly not have been made by Newbold, Greenwood and Yule without certain strict provisos, and it is here suggested that most of the confusion of thought which has occurred since 1926, has resulted from an overstatement of the claims made by these authors, and a disregard of their warnings. It would seem necessary, therefore, that we should clarify our thinking on this subject by reviewing the arguments of Greenwood, Newbold and Yule, and also the results of subsequent research to see how far one is justified in accepting this concept of proneness, and what use, if any, can legitimately be made of it at present.

What is meant by the term Accident-Proneness? Farmer and Chambers[8] state: "The fact that one of the factors connected with accident liability has been found to be a peculiarity of the individual allows us to differentiate between 'accident-proneness' and 'accident liability.' 'Accident-proneness' is a narrower term than 'accident liability' and means a personal idiosyncrasy predisposing the individual who possesses it in a marked degree to a relatively high accident rate. 'Accident liability' includes all the factors determining accident rate: 'accident-proneness' refers only to those that are personal." From the above it is obvious that environmental factors plus the personal factor of accident-proneness in the individual determine the accident liability of individuals in any given situation. It is however, concerning the latter that confusion has arisen. This term is widely used in current literature and yet it is scarcely ever well defined. This is apparent even in the technical language of some of the authorities. Thus Vernon[9] in 1936:

"The accident-proneness of various individuals is not a fixed quality but is liable to be affected by any and every change in their bodily condition. This condition is influenced by external changes of environment as well as by internal changes of physical and mental health."

This statement clearly implies that accident-proneness is a variable attribute, whereas in 1939 the same author states:[10]

"Accident liability is influenced by many other personal qualities besides inherent accident-proneness. It depends on general health . . . . age and experience, fatigue, etc. . . ."

This second statement suggests that "inherent accident-proneness" is a stable invariable attribute of the individual (in much the same way as we regard his general mental ability, manual dexterity, etc.) and that accident liability depends on: (a) inherent accident-proneness; (b) variations in personal health, age, experience, fatigue, etc.; (c) the risks inherent in the environmental situation.

Whether or not Vernon changed his mind between 1936 and 1939 is beside the point for he certainly gave no indication that this was so in the later work, and the reader is still left in a state of indecision. The point has been raised here not with the intention of splitting hairs, but by way of illustrating the lack of precision in our thinking on this subject. It is of vital importance, moreover, whether accident-proneness is a stable or variable attribute, for surely there would be little point in attempting to devise means of measuring or assessing an unstable phenomenon. The general 'belief' today is that accident-proneness is a fairly stable attribute. However, of equal importance is the question as to whether it is a general or specific factor. Thus it is conceivable that A may be more prone than B in situation X, but B more prone than A in situation Y. On the other hand, it may well be that no matter what the situation is A will always be more prone than B, although the liabilities of both will have changed by the same amount owing to the different risks in the situation itself. This latter view is one which is quite generally held, and the accident-prone individual is regarded as one who has many accidents at home, at work, on the public highways, and is in fact a sort of "calamity Joe" who is always "coming unstuck." There is, however, no proof for either of these two hypotheses and some pertinent comments have been made in this regard by Brown and Ghiselli.[11] Again the matter is an important one for prediction and accident prevention policies.

It is clear from the above that the term accident-proneness should be clearly defined before we attempt to make any practical use of it. A clear conception of its meaning can only be obtained by a close scrutiny of our existing knowledge and the methods of analysis which have given rise to it. These are, fortunately or otherwise, of a mathematical and statistical nature. They cannot, however, be avoided for they involve basic assumptions which we cannot afford to ignore. Unless the student is prepared to study these carefully and comprehend their full implications, he would be well advised not to make any use of the term accident-proneness at all until a new meaning is given to the word on the basis of research findings resulting from a new approach. There is regrettably a tendency among many psychologists today to forget, conveniently or unconsciously, about the assumptions underlying all mathematical and statistical "proofs," and the fact that it is never possible in any science to prove a hypothesis. The result is that often claims are overstated, tenuous relationships are magnified to causal relationships, and possibilities become certainties as one turns over the pages of the literature. We can only avoid this slip-shod method of thinking by sticking closely to the evidence before us . . . .

The Prediction of "Accident-Proneness"

CONSIDERABLE advantages would be gained if techniques could be discovered which would predict the accident-proneness of individuals (if such a phenomenon exists) in a given situation, before they had actually entered that situation and incurred accidents. These are clearly stated by Farmer and Chambers in their successive attempts to do so.[7,8,12,13] The authors are also careful to point out that:

"Care must be taken not to make accident incidence *per se* a measure of accident-proneness, for this is to adopt the position of those who say that accidents are due to carelessness and when asked to define carelessness, do so in such a way as to leave little doubt that by carelessness they mean having an undue number of accidents. 'Accident-proneness' implies the possession of those qualities which have been found from independent research to lead to an undue number of accidents. If the term is used in this way a person can be said to be accident-prone without any knowledge of the number of accidents he has sustained, for this statement will merely mean that he is more likely than others in equal conditions of exposure to sustain accidents. Such a knowledge would make it possible to warn certain people against entering dangerous occupations, so that although they were accident-prone in a relatively high degree, they might go through life with very few accidents."

Be this as it may, the fact remains that the discovery of these "qualities" can only be achieved by measuring the validity with which certain tests can predict some criterion of accident-proneness in a given group. This criterion can only be the number of accidents sustained by the respective individuals in that group. Moreover, whether or not "accident-proneness" really does exist, we should be happy if we could predict the *number of accidents* a person is likely to have. Hence, a good fit with some theoretical bivariate distribution is of considerable importance quite apart from what the parameters happen to signify. And this is the obvious line of approach which the investigators take. A further point must be made in this connection. Prediction only becomes feasible when the criterion of the attribute to be predicted is itself reliable and stable. If an individual's accident record in the same set of circumstances is an unstable reflection of his "inherent accident-proneness," then prediction of proneness by this means must be a shaky affair. The correlations between the incidence of accident shown earlier in this study indicate quite clearly that there is

very little consistency in the records of individuals from period to period. It is not surprising therefore, that all attempts to predict accident-proneness using accident records as a criterion or measure of this, have so far failed rather lamentably. The investigators in 1933 appear to have been fully aware of these difficulties for they state:[5] "Unless individual susceptibility to accidents is a stable quality manifesting itself during all periods of exposure, we cannot expect a very definite relation between psychological tests and accident rate," and later in the same report, "Attention has been called to its smallness (i.e., correlation) since it shows that accident susceptibility is not a very stable factor within these groups; hence it cannot be expected that performance in any test purporting to measure susceptibility will have a very close relation with recorded accidents."

What is surprising, therefore, is that the investigators should have persisted in the face of these insurmountable difficulties, before establishing a more stable criterion of proneness.

Having been unsuccessful in their first and second attempts, the investigators proceed to a third[6] and a fourth[7] and the reader is amazed to find the latter report opening with what can only be regarded as a statement of creed, in view of the absence of any intervening research findings, which could alter the position as stated by them above. This is reflected here for comparison with the quotation already given: "Previous statistical investigations have shown that industrial workers exposed to equal risks were unequal in their liability to sustain accidents, and that this unequal liability was a relatively stable phenomenon, manifesting itself in different periods of exposure and in different kinds of accidents."

Furthermore, the stability of their own criterion in this particular case (as reflected by correlations between accidents in successive periods) was only of the order of .176 to .328.

It is not surprising, therefore, that despite the one or two refinements introduced in the constitution of groups tested, these latest attempts should have yielded only inconclusive results. Surely if the efficiency with which the criterion can predict itself is only of the order of .3, then it is a fond hope to expect that any test, which can only measure part of the criterion will have a predicting efficiency as great as, or greater than .3.

Had the above research findings been more positive, they would have warranted fairly detailed consideration in this study. As it is, a summary of the main conclusions will suffice. The student who is interested in making further attempts on this problem, is however, strongly advised to study the original works if only to acquaint himself with the type of difficulty to be encountered, and the pitfalls to avoid. These will be largely concerned with: (a) the selection of appropriate experimental groups, and the control of such influences as age, experience and environmental factors; (b) the definition of events which are to be regarded as accidents, and the completeness and accuracy of these data; (c) the stability or consistency of accident records in successive periods as a measure or criterion of personal accident-proneness; (d) the adequacy of existing instruments of statistical analysis, and the precautions which must be taken against the use of techniques which are suspect, to say the least, when applied to frequency distributions associated with accident data. The techniques usually applied in psychological research are, for the most part, dependent upon the normal distributions and correlation surfaces. Accidents on the other hand are a discrete variable and yield J-shaped or negative binominal distributions. This fact alone alters the whole meaning and predicting efficiency of the ordinary product-moment correlation co-efficient. Above all it is essential to avoid the folly of applying statistical procedures, knowing at the same time that they cannot be justified on mathematical grounds. Self-deceit of this type has never produced any results worth having....

Over and above these difficulties hangs a "sword of Damocles" in the form of the inconsistency of the criterion to be predicted. Owing to this factor it is conceivable that the validity of indicators already established may be seriously upset. It is feared that the investigator will always come up against this statistical stumbling block. If the incidence of accidents in successive exposure periods is as unstable as previous research findings have shown it to be, then surely, one can hope for little efficiency in one's predicting techniques. There is of course, the final hope that if more attention is given to the definition of accidents to be included in the study this deficiency may be overcome. The unreliability of the criterion may in some measure be due to the fact that accident data are not uniform, and that by merely including for study all accidents (from existing records) irrespective of causes or the manner in which they occurred, one is in effect collecting a 'hotch-potch' of events which are by no means homogeneous, or representative of the phenomenon of proneness. The result may be similar to that of mixing measures of height and weight or scores from test A and test B in the same distribution.

This point might well be elaborated for the consideration of future research workers. It is felt that in most previous research scant attention has been paid to the definition of what constitutes an accident. It is appropriate that the following questions should be asked and answered: (1) What are the phenomena that are being studied? What is our variable? What constitutes our total statistical population of events? (2) If it is not possible to record the total population of events in any given set of circumstances, what sample can we hope to study? (3) How is this sample selected, and is it representative of the whole?

An accident might justifiably be defined in the following manner: "In a chain of events, each of which is planned or controlled, there occurs an unplanned event, which, being the result of some non-adjustive act on the part of the individual (variously caused), may or may not result in injury. This is an accident."

There are certain aspects of this definition which need emphasizing. Firstly, it is the occurrence of the unplanned or unpredicted event which constitutes the accident. Secondly, this event is due to some non-adjustive act on the part of the individual concerned. Thirdly, the resulting injury is a consequence of this unplanned event, and does not itself constitute the accident—it follows afterwards. From this it follows that our statistical population of events is the sum total of all unplanned incidents in the given environmental circumstances and in the given population of individuals. By definition also, these will exclude all events which can definitely be attributed to the influence of mechanical or impersonal causes—e.g., the case of an omnibus driver being stung by a hornet, inherent defects in the machine, etc. This naturally implies a strict investigation of all accidents in order to establish the factor of personal causation. This will also serve the purpose of debiting the correct individual for the responsibility of the accident. Thus if A drops a brick and it falls on B's head, the former has the "unplanned event," and the latter the injury; who has the accident? The answer surely is A and not B who is usually debited with this in the register.

By definition all the following must be regarded as constituting our population of accidents: (1) all errors or slips or "near accidents" which result in no injury; (2) all unplanned events resulting in minor injury; (3) all unplanned events resulting in major or lost time injuries which incapacitate; (4) all unplanned events resulting in death.

We might consider to what extent these data can be made available.

1. *Errors, Slips and Near Accidents.* Here we can be almost sure that data in respect of these would be incomplete, even with the most rigorous supervision. It might be profitable, however, to set up experimentally-controlled conditions in a laboratory, equating the environmental circumstances for all subjects and undertake the study of errors in some series of test situations. This might well throw some light on the proneness of individuals to this type of "accident," which could perhaps be related to accidents in the industrial situation.

2. *Accidents Producing Minor Injuries.* Only under highly controlled conditions could one be sure of amassing data which were complete and accurate, and which did not merely reflect a tendency on the part of some to report these incidents.

3. *Accidents Producing Major Injuries.* Here one could be reasonably sure of collecting all the data. The difficulty is, of course, that incapacity usually means a subsequent period of non-exposure which may be of considerable length and may even result in the removal of the individual from the work situation.

4. *Accidents Resulting in Death.* Here one is virtually certain of the data, but these occurrences are inevitably followed by subsequent non-exposure.

This self-elimination of many of our cases (and unfortunately they are the very ones whom one is interested in studying) has a serious effect upon subsequent statistical analysis.

Thus under normal circumstances (i.e., excluding those subject to the highest degree of control and supervision) one can only be reasonably sure of collecting and including *complete* data on major accidents. This means that we get a selected sample of our total population of "unplanned events" (or accidents) for study, *and this sample is selected purely in terms of subsequent injury.* Now if the resulting injury is determined *by chance*, this would mean that we should get a random or representative sample of our total population of events. This would be extremely fortunate, for any conclusions arrived at on the basis of this sample would then be applicable to the total population of events. If on the other hand the resulting injury were not chance-determined, but were in some way a function of the manner in which the unplanned event originally occurred then we should be left with a selected sample, and statistical results could no longer be applied to the parent population from which these events came. It might be justifiable to argue that in any case one is only interested in studying major accidents and not the minor which have trivial consequences. This may well be so, but it must then be conceded that one is no longer studying accidents but merely the incidence of injury resulting from accidents, which may have nothing to do with personal liability.

Under the circumstances where one is studying accidents causing major injury only, it would appear that there are two *"liabilities"* to be considered: (a) the liability of the individual to have an unplanned event or accident in a given environment, and (b) the liability of this event to result in subsequent injury in a given environment—resulting in its being recorded.

It is conceivable, therefore, that if injury were not chance determined the following results may be obtained where—

e—represents unplanned events without injury,

(e)—represents unplanned events with major injury, and the suffix indicates the type of accident.

In the case of two individuals the results might well be:

Individual A—e_1, e_1, e_3, (e_7), e_9, e_{12}, e_3 = 1 reported major accident

Individual B—e_1, (e_7), (e_7), (e_4) = 3 reported major accidents

In the records B would obviously be considered more accident-prone than A, but this would not be a reflection of his proneness to unplanned events (slips or near accidents), since B has only four, whereas A has eight. It would rather be a reflection of the liability of such events as he had to result in injury. This may well be determined by factors beyond his control, and the study of the (*e*)'s would give little indication of the individual's susceptibility to (*e*)'s.

It is appreciated that the development of this theme of the "double liabilities" tends to lead to a state of confusion where one feels that the problem slips one's mental grasp. This is not because the argument itself is confusing, but rather because we have not yet devised techniques of analysis which will enable us to disentangle the skeins of a confused and intricate pattern of events. Furthermore, our attempts to oversimplify the accident-causing situation by seeking to subdivide it into "personal causes" and "environmental causes" tends to lead us nowhere. Greenwood and Woods in their original report recognized that "individual susceptibility sheltered a motley host of motives and factors which will be very difficult indeed to separate and measure." Surely the essence of accident causation is the rather intricate inter-relationship which exists between the individual and the environment and the influence of one cannot be appreciated without considering its inter-action with the other, and to attempt to separate the two is about as profitable as attempting to unravel the respective influences in the heredity *versus* environment controversy. Full comprehension of these inter-relationships and their statement in universal "laws" will possibly only be achieved when we have evolved statistical techniques which will facilitate three- and perhaps four-dimensional thinking in these matters. Existing methods of analysis tend to make the problem too simple—too dependent on the direct cause-and-effect relationship.

It is conceivable that with our present instruments of analysis we may yet succeed in pinning down the personal factor in accident-causation (or accident-proneness) in terms of some strict definition—but this may involve so many restrictions in the mathematical sense that the concept will bear little relation to the real factors in the everyday industrial situation. The above comments do not constitute a denial of the usefulness of statistical procedures in investigations of this type, nor is it suggested that the research worker can ever dispense with them altogether. The conclusions indicate rather the limitations of these techniques, and emphasize the fact that statistics can never do your thinking for you.

The above considerations may well lead one into a state of despondency and frustrated resignation were it not for the fact that a different approach to the problem seems possible. This approach may not enable us to analyze accident liability in terms of universal principles, laws of distribution, etc., with reference to human behavior in general, but it may well enable us to reduce the incidence of accidents in our community by enhancing our knowledge of the mechanisms at work in causing individuals to have accidents. And surely this is the ultimate objective of all this work. This approach has been clearly explained by Viteles[14] in his reference to the accident reduction programs of the Cleveland Railways Company.[15] Viteles' introductory comments to these studies are worth considering:

"The psychological study of accidents in the manufacturing industry has been largely confined to a statistical study of factors influencing accident susceptibility. Such statistical studies are of questionable significance in arriving at a knowledge of the causes of accidents .... However, they suffer from serious limitations as practical aids in the reduction of accidents.

"In the first place the statistical approach is oriented from the viewpoint of discovering relations existing in a group of individuals, and not from the point of view of the adjustment of the single individual who has become involved in, or is susceptible to accidents .... The function of the statistical approach and of statistical investigations in preventing accidents attributable to the human factor may be described as that of investigatory *group* tendencies. In contrast with this is the *clinical approach*—the functions of which are to determine the relationship existing among a number of factors which have played or may play a part in the case of the individual who becomes involved in accidents and to develop a program for the prevention of additional accidents on his part.

"Another limitation of the statistical viewpoint in accident prevention is its emphasis upon isolated aspects of individual personality, in contrast with the concern, in the clinical approach, for the total personality of the accident-prone individual .... It is undoubtedly true that a detailed examination of each stone tells much about the *structure* of a mosaic, but the contribution of each to the value of the whole flows from the *integration* of the various parts, and can only be fully determined through an examination of the whole, and of the inter-relationships among the parts in the whole.

"The aim of the clinical approach is to examine the whole individual, and from an examination of the whole to arrive at a knowledge of the significance of the various aspects of his personality—the relative importance of each sector of his personality in a given situation. The application of the clinical approach in the analysis of accident causes involves a complete study of the individual involved in accidents—it makes the individual the point of departure, and provides for a thorough examination of every factor —physical, mental, social, and economic, and of those extraneous to the individual—which may

have played a part in the accident in which he has been involved.

"The diagnosis of accident-proneness is being followed by special treatment, and treatment based on an exact knowledge of the factors which are responsible for the accident record—in the case of the particular individual. Treatment takes the form, not of mass education, or the more drastic measure of termination, but most frequently that of systematic instruction designed to efface faulty habits .... medical treatment, discipline, encouragement and supervisory follow-up .... It recognizes that there are many different causes of accidents and that they may combine in different patterns in different individuals.

"The knowledge of the factors which play a part in the case of a single individual is obtained by an experimental study of the individual. This includes psychological examination, close observation of operation details, a review of his relationship with supervising officers and fellow-workers, and possibly a detailed study of the home circumstances.

"The case study of each accident-prone motorman in the Cleveland Railway Company involved: (1) A careful examination under normal operating conditions of: (a) general operation, (b) motoring habits, (c) mental factors, (d) physical factors. (2) Analysis of previous and current years accident record. (3) Personal interview. (4) Decision as to primary causes of accident-proneness. (5) Preparation of report of case recommending treatment based upon findings. (6) Treatment and follow-up."

The most significant finding of the Cleveland study is that in no two cases were the causes of accident-proneness exactly similar. In most instances, several causes existed, although in each case, one of these was found to be of primary importance. The percentage distribution of primary causes of accident-proneness among the 50 men is given in Table II.

TABLE II.

	%
Faulty attitude	14
Failure to recognize potential hazard	12
Faulty judgment of speed and distance	12
Impulsiveness	10
Irresponsibility	8
Failure to keep attention constant	8
Nervousness and fear	6
Defective vision	4
Organic disease	4
Slow reaction	4
High blood pressure	2
Senility	2
Worry and depression	2
Fatigability	2
Improper distribution of attention	2
Inexperience	2
Miscellaneous	6

As a result of this application of the clinical method in the study and treatment of motor drivers, the combined rate of accidents on the part of the motormen involved in the study dropped from 1.31 per 1,000 miles in 1928 to .75 in 1929—equivalent to a reduction of 42.7%.

Viteles quotes the experiences of the accident clinics run on similar lines at the Milwaukee Railways & Light Company (under the direction of Dr. Bingham)[16] and illustrates the value of these techniques by stating that: "As a result .... the actual net savings in cost of injuries and damages in 1929 as compared with 1928 amounted to $300,670. Collision accidents on bus lines and street railways have been reduced more than 35% since the work was started in 1927 .... The figures for 1931, as compared with those for 1926, show a 58% reduction in collision of surface cars with trolleys; 54.4% with pedestrians; 71.3% with other surface cars; 36.8% in boarding and alighting accidents; and 23.6% in all other accidents .... Associated with these economic returns are enormous social benefits in reducing the suffering and the general social maladjustment associated with personal injury resulting from accidents."

Spectacular though these results are, their achievement should not pass without certain comment:

1. The application of these procedures can be an expensive business where one spends a considerable time on individual cases. In the case of railway accidents where the consequences are very severe on account of the large insurance and damages claims, etc., the proposition becomes an economic one. It is doubtful, however, whether many industries could be persuaded to adopt similar measures where, owing to the lesser consequences of accidents, the economic gains would not necessarily show a profit in the financial statement, even though the social and indirect gains might be equally as great.

2. These results do not necessarily constitute a validation of the clinical procedures used nor of the diagnoses made in individual cases. This can only be achieved by their application to (a) an experimental, and (b) a control group, as was done in the Hawthorne Experiment of the Western Electric Company. The point is, of course, that the results may be just as "screwy" as they were found to be in this classic experiment, namely, the accident rates in the control group (receiving no treatment) may also go down, not because of any measures being adopted in their own case, but principally because they were being applied in the case of another group. This might indicate that individuals were responding, not so much to the "shrewdness" of diagnosis, as to the new interest being taken in them by management—to the new psychological atmosphere prevailing in the works. It is conceivable that the diagnoses may not have been directly responsible for the results. These may have been due primarily to management's interest in the situation. Employees were taken into management's confidence. Their problems were discussed with them in a sympathetic manner which enabled them to understand them better; this probably created a new attitude of mind on the

part of the workers to the problem of accidents, and encouraged them to think of safety in new terms, and to regard their work habits in a new light. They were thus able to see the significance of causes and relationships which had probably never occurred to them before, and to heed these in the everyday work situation. It is possible that this new mental approach pervaded the whole work group as the result of clinical studies, and may well have been the more general and underlying factor responsible for the spectacular results achieved. The natural rejoinder to these comments is: "Does it matter, as long as the results are forthcoming, and the whole business is a paying proposition?" This point is readily conceded, but the truth of the matter is of fundamental interest to the investigator. It may well be that the accident clinicians on these railways were not really gaining so much knowledge concerning the direct relationship between personal factors and accidents, as learning what Roethlisberger has called "new social skills." If this is so, then the development of these is of the utmost importance. It may be possible, therefore, in the future to define these techniques along new lines, and make them more of an economic proposition to the average industrial plant.

3. The third point to be emphasized here is the fact that the term "accident-proneness" is now no longer used in the original sense. It is now defined on the basis of a *clinical* and not a *statistical* diagnosis, and, as such, is largely a term of convenience, rather than of precise mathematical definition. This loss of precision is perhaps more than compensated for by the advantages of a new approach "which places special emphasis on the individual . . . . and recognizes the great variety of individual differences. In dealing with each motor-man, truck driver, or automobilist, he is recognized not as one of the mass, but as a distinct personality."[16,14]

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How Long Is "A While?"

ALL TOO frequently a patient makes a satisfactory recovery from an acute episode only to delay his convalescence and interfere with the maintenance of his health because he was not adequately advised in regard to his work capacity and what limitations he should place upon himself. The case of one of our supervisors illustrates this point very well. He had been under the care of one of our leading clinics for treatment of an anginal type of pain which was diagnosed as coronary insufficiency. When he returned from the clinic, he was questioned about any instructions given him in regard to pursuing his normal duties. The patient had been informed that he could return to work but he should "take it easy for a while." Further inquiry brought out the fact that they had failed to question him regarding his work; and it so happened that, in spite of being a supervisor, his work was quite strenuous and required constant walking during the entire day. I point this out as an example to show that some of our finest clinics sometimes forget that "patients work." How much work is involved when you "take it easy?" How long is "a while?"

—From an address by E. A. IRVIN, M.D., President, INDUSTRIAL MEDICAL ASSOCIATION, at a Dinner in his honor given by the MICHIGAN INDUSTRIAL MEDICAL ASSOCIATION at Detroit, March 10, 1953.

Graduate Training in Occupational Medicine

Report of Committee on Education and Training
Industrial Medical Association

THE Committee on Education of the Industrial Medical Association has undertaken in the current year to make a survey of graduate programs offered to physicians in the field of occupational health. This is similar material to that presented by Mallery in *Industrial Medicine and Surgery* in March, 1952.[1] The data here reported are compiled from questionnaires sent to the universities known to maintain graduate programs in this field. An attempt was also made to discover whether or not programs have been initiated during the current year in other schools of medicine. As far as our communication is complete, we report that there has been no new program for graduate study leading to a degree in occupational health initiated during 1952-1953.

This report, in distinction from that of Mallery, will summarize the information under the heading of the university at which the courses are offered rather than, as Mallery presented it, in terms of the kind of graduate education available. It has not been possible during the current year to visit each institution, and our information may not be complete.

An attempt will be made to avoid repeating in detail what was presented by Mallery. But to make this report clear in itself so that a physician seeing this material will know where he might turn for current graduate study, there is some repetition in description.

University of Cincinnati

THERE is an unusual arrangement at the University of Cincinnati under the title of the Institute of Industrial Health which is part of the Graduate School of the University of Cincinnati and located in the College of Medicine. The degree of Doctor of Industrial Medicine is offered after three calendar years of study, two at the university and one at an industrial plant. It is possible for a student to take five years to complete this work if his program requires. As in other institutions, students may do part-time work here, but as yet none has applied. At present there are two special students planning to work for one year only and not for a degree. One degree student is ready for graduation in 1953, four are expected to graduate in 1954, four in 1955, and one student is working at an irregular pace for graduation at an unspecified time. There are also short courses, and these have been arranged to suit the needs of the students. During the past two years, students have been accepted for as short a period as six months, with a certificate given for this work. It is necessary to have a degree of medicine from an accredited school, one year of internship, and one additional year of hospital training or its equivalent for admission to the Institute of Industrial Health.

The course of study undertaken by the selected candidates for the degree of Doctor of Industrial Medicine consists of a two-year period of intense preliminary training in industrial medicine, followed by one year of practical experience under adequate supervision in industry. This course is designed to meet the requirements of any specialty board which may be established in this special field. It is not practical to list in detail all the courses that are required for the degree, but they are here summarized. The areas covered include industrial hygiene, clinical industrial medicine, toxicology, industrial medicine administration, radiation medicine, biometry, epidemiology, and personnel administration, in addition to actual plant problems.

All graduates are expected to qualify for clinical work and administration. The course is intended to produce medical directors for industry. It is not intended to produce research workers, but courses are given in the graduate school for students who wish to qualify toward these ends, which are different from those of the main purpose of the course in graduate training.

Columbia University

COLUMBIA University offers in its School of Public Health the degrees of M.P.H., M.S., and Dr.P.H. for those who wish to make a special study of occupational health. It is possible for students working toward a degree to do part-time work, but in general they do not spend more than two years completing their require-

The Committee: A. G. KAMMER, M.D., University of Pittsburgh Graduate School of Public Health, Chairman; HARRIET L. HARDY, M.D., Harvard University School of Public Health, Secretary; L. G. MCGEE, M.D., Hercules Powder Company, Wilmington, Delaware; J. WISTER MEIGS, M.D., Yale University Department of Public Health; I. R. TABERSHAW, M.D., Columbia University School of Public Health; and H. A. VONACHEN, M.D., Caterpillar Tractor Company, Peoria, Illinois.

[1] MALLERY, O. T., JR., M.D.: "Graduate Education for Physicians in Industrial Health and Occupational Medicine," *Industrial Medicine and Surgery*, 21:3, 101 (March) 1952.

ments. In Columbia, as in other institutions, short courses have been offered for the past five years. There are three students currently enrolled in such courses. Four students are specializing in occupational medicine in 1952-1953, one of them working toward the Dr.P.H. and three toward the M.P.H. degree. Columbia University describes its admission requirements to graduate study as for physicians of "suitable professional qualifications." Didactic work is presented under the general headings of industrial medicine, occupational disease, biostatistics, epidemiology, public health, sanitation, and industrial hygiene. Clinical work is not required, but is available through clinics at the Columbia Presbyterian Medical Center. There is also industrial clinical opportunity in nearby industries.

Harvard University

WITHIN the School of Public Health a course covering one academic year is offered to physicians wanting graduate study in the field of occupational health. The degree may be Master of Industrial Health or Master in Public Health with the physician majoring in industrial health. There are five physicians at present working toward the M.I.H. and eight toward the M.P.H. The admission requirements are that the physician should be a graduate of an acceptable medical school with a year's internship in an approved hospital. Physicians may attend the regular course for two months when material of particular interest to them is presented in the form of lectures, field trips and elective clinics. A two-day session for Massachusetts physicians is being presented in 1953. The didactic material is under the following headings: industrial hygiene, industrial medicine, personnel administration, human problems of adjustment, disability appraisal, public health, biostatistics, epidemiology, medical care, sanitation, ventilation, industrial air analysis, environmental physiology. Additional special work such as a report or survey is required for a degree.

Clinical practice is offered in the offices of local industrial medical departments and in hospital clinics in the Boston area.

Johns Hopkins University

JOHNS HOPKINS University offers advanced study to physicians in the field of occupational health in its School of Public Health. The degrees of M.P.H., M.S., Dr.P.H., and Sc.D. are offered. Students working for degrees can do part-time work. At the present time, no short course is being offered. Work in this field is given in the Department of Environmental Medicine, and it is interesting to know that the chairman of this department holds academic rank in clinical duties in the Department of Medicine at the Johns Hopkins Medical School.

Candidates for degrees usually take advanced material, such as biostatistics and epidemiology, and industrial health, physiological hygiene and physiological climatology within the Department of Environmental Medicine, in addition to certain courses in public health. They do an original research problem in industrial health, which may be either a laboratory or field problem depending on the interests of the individual.

Those responsible for work in occupational health at Johns Hopkins University believe that the best training for industrial medical work is a solid foundation in public health. Therefore, there is no attempt to give training in clinical practice. However, it is possible for physicians to have an opportunity to see occupational disease and dermatoses, and seminars are held with the students in the School of Medicine. There are also visits made to local industries for study of industrial health and occupational medicine, and trips to governmental agencies working in this field. There is no physician working for a degree in the Department of Environmental Medicine during the current year.

University of Michigan

THE University of Michigan offers work to physicians interested in the field of occupational health within its School of Public Health. Physicians may obtain the degree of M.P.H. in one year. There are three physicians currently enrolled in this course under a fellowship provided by the General Motors Corporation. Students may do part-time work if they wish. A degree in medicine is required for admission to the work leading to the Master of Occupational Health degree.

The University of Michigan School of Public Health has been giving short courses for non-credit continued education covering subjects in the field of occupational health since 1943. There have been 51 such courses covering a wide number of topics, and 13 of these were specifically courses dealing with subjects in the field of occupational health, with a total attendance of 1385 individuals.

The didactic subject matter required to attain the degree of M.P.H. includes public health practice, epidemiology, statistics, medical care administration, environmental health, industrial accident prevention, mental health, industrial health practice, principles and methods of industrial health, occupational diseases and industrial toxicology.

There is clinical training offered in the hospital of the University of Michigan and opportunity to take field experience in industrial plants, particularly in the various plants of the General Motors Corporation, for which credit is given. There is also an opportunity to work with the Michigan Department of Health and the Detroit Department of Health in the divisions responsible for industrial hygiene. It is interesting that most of the physicians who specialize in industrial health do not remain to complete the requirements for the M.P.H. degree. They accumulate about 20 of their required credit

hours for the degree. One student has received his degree as M.P.H.

New York University

NEW YORK University reports that it is not currently training any physicians in the field of occupational medicine but does continue to offer the degree of M.S. in industrial medicine. This is given in the post-graduate medical school in the institute established as a partnership between New York University-Bellevue Medical Center and the College of Engineering.

University of Pittsburgh

THE University of Pittsburgh offers in its School of Public Health the degrees of M.P.H., Dr.P.H., and Ph.D. for graduate students in the field of occupational health. If the student wishes to go on to a Ph.D., it is necessary for him to enroll in the graduate school of the university, taking most of his work in the School of Public Health, fulfilling language and research requirements for the degree. It is possible for students to do part-time work, and at present there are two working at this pace. There are six candidates for the M.P.H. degree and one candidate for the Ph.D. currently. No short course is offered at present at the University of Pittsburgh.

All the applicants must be graduates of a class A medical school with at least one year of hospital internship. With minor exceptions, the faculty members are full-time employees of the School.

Lectures and seminars include industrial medicine, industrial hygiene, environmental physiology, public health, biostatistics, radiation physics, health physics, biochemistry, applied toxicology, analytical measures in industrial hygiene, job analysis and placement of workers. An investigative or other project is part of the prescribed study. Where possible, this assignment is designed to carry through for the entire period of graduate study. There is considerable clinical training offered in the one-year M.P.H. course in that the students receive a minimum of four hours per week for 16 weeks of clinical training. There are other opportunities for clinical study which are arranged with each student, depending on his interests. The longer Ph.D. course provides additional clinical training during the second calendar year. Programs for an in-plant year following training at the university are arranged on an individual basis. The in-plant training year is a requirement of the Ph.D. course and comprises its third year.

It is the feeling of the individuals who are most concerned with training in the field of occupational health at the University of Pittsburgh that such training is important, and we quote the expression of their opinion: "We are convinced that the field has an enormous subject content which can best be mastered by formal training, and that physicians with this training will be able to perform much more effectively than they would without it." It is further considered that there is real value to the institution as a whole in graduate study in occupational health, expressed as "the research and training programs in occupational health round out the curriculum and interests of this School of Public Health in a satisfactory way, and make a significant contribution to the activities of the university's medical center."

University of Rochester

THE University of Rochester, in Rochester, New York, accepts students in its graduate school toward the degree of M.S. in industrial medicine. The majority of courses are given in and by the medical school. Students who do not wish to qualify for the degree by submitting a thesis may receive a certificate on completion of the course. It is possible for students to do their work on a part-time basis, as for instance when they are working on a project in a local industry exceeding the minimum required for training, during which time the student may actually be receiving the salary commensurate with the work which would have been done by a staff physician. The number of students doing part-time work depends on the time available and the character of the program the student has chosen. There is no short course offered at the University of Rochester. It is necessary to have an M.D. degree from a recognized medical school and at least one year of internship for admission. Preference is given to students with additional training.

The lecture work is given during the first year, taking about two-thirds of the time and presented under the headings of practice of industrial medicine, industrial physiology, radiation biology, statistics, tracerchemistry, and industrial hygiene. There is considerable clinical training offered at the University of Rochester by required service in the Outpatient Departments of the Strong Memorial and Rochester General Hospitals in the field of dermatology, physical medicine, and rehabilitation. Further, there are required periods of work with the medical department units of the Eastman Kodak Company and other local industries, and attendance at definite Medical Staff Rounds and various medical meetings is encouraged.

Those interested in training of physicians in the field of occupational health at the University of Rochester have definite convictions that graduate work is of real value. It is expressed as "an excellent abridgement of the training which would come only with five to 10 years of experience and self-training, if at all. A broader and more useful concept of industrial medicine than many men in the field acquire in a lifetme of practical experience." It is further felt that the work in occupational medicine is of value in the life of the institution itself, and this is expressed as follows: "an important factor in stimulating

a recognition and interest in industrial medicine; a valuable bridge between medicine in general and the expanding field of industrial medicine."

Yale University

YALE University presents graduate study in the field of occupational health in its Department of Public Health. The degrees of M.P.H., M.S., Dr.P.H., and Ph.D. are offered. Students may do part-time work under special arrangement and are expected to get their degree within two years for the M.P.H., and within four years for the Dr.P.H. This applies to the part-time student who takes longer than the normal amount of time. There is no physician specializing in occupational medicine this year. Short courses are not offered except for occasional presentations done in cooperation with local industry, and a one-day institute for Connecticut physicians given in cooperation with the state medical society.

Any physician who is a candidate for the degree of M.P.H. must have a degree of medicine from an accredited medical school. The headings under which the work is given are vital statistics, biostatistics, public health, medical care organization, medical jurisprudence, introduction to occupational health, health problems of the occupational environment, evaluation of the occupational environment. The preparation of an essay is required for a degree. Clinical work is provided by individual arrangements with local hospitals, especially the Grace-New Haven Community Hospital. Clinical industrial medicine is arranged with local industries. The group in charge of training physicians in occupational medicine at Yale University feel that "formal training is necessary, and that a year's orientation in public health aspects is basic." It is their feeling that "few students have appeared thus far because the medical schools are just beginning to direct the students' interest toward the clinical possibilities in this area of preventive medicine." It is also felt at this institution that the program in occupational medicine tied in with instruction in public health is of great value in orienting the faculty as to new developments.

The training is provided by the Institute of Occupational Medicine and Hygiene which is a section of the Department of Public Health and under the direction of a full-time assistant professor of occupational medicine.

Comment

REVIEW of the material that we have been able to collect from the nine universities offering graduate training to physicians in the field of occupational health presents a variety of opportunities for the student. There are in general two approaches: one in which the principal emphasis is placed upon the clinical and technical aspects of industrial medicine with secondary emphasis on portions of public health, and the other in which this order of emphasis is reversed. It seems clear, at least at this stage of development of this special field, that occupational medicine figuratively "plants one foot in each of the two camps." The availability of a wide spectrum of training opportunity suggests that as yet an accepted and ideal final plan has not taken definite shape.

PHYSICIANS IN GRADUATE STUDY IN INDUSTRIAL MEDICINE 1952 AND 1953

	Full-time for degree		Part-time or not for degree	
University	1952	1953	1952	1953
Cincinnati	4	10	4	2
Columbia	2	4	3	3
Harvard	5	5	8	0
Johns Hopkins	0	0	0	0
Michigan	1	3	1	0
New York	0	0	0	0
Pittsburgh	6	7	2	2
Rochester	2	0	0	0
Yale	0	0	0	0

Several factors appear to be influential.

Medicine as a whole is just beginning to sense the ramifications of promoting worker health. Medical schools are only recently and chiefly in departments of preventive medicine giving undergraduate medical students a glimpse of the possibilities of embracing a career in occupational medicine. Industry in general, with notable exceptions, has not demanded physicians with graduate training and scarcely senses that it might justifiably set high professional standards for its physicians. For these reasons it is not surprising that the table of numbers of students in full- and part-time graduate study shows such low figures.

There appear to be fewer short courses being given than when Mallery wrote his report. But one can imagine that if there were a demand for short courses in any community, the institutions described in this communication would be quite prepared to develop whatever type of session was most desirable, as is being done at Harvard, Michigan, and Yale.

Presentation of this summary of basic information obtained from nine institutions giving graduate study leading to a degree in occupational health will, we believe, stimulate physicians thinking of entering this field toward a definite choice.

Candidates for Degrees

HERE are the pictures of 23 of the candidates for advanced degrees in the University courses described by Dr. A. G. Kammer in his article "Graduate Training in Occupational Medicine" on page 149. The first two lines under the picture identify the Medical School at which the qualifying M.D. was received. The third and fourth lines state the degree sought and the place of study.

Charles Wade Asbury, M.D., 1942
University of Cincinnati
Doctor of Industrial Medicine
University of Cincinnati

Helen Schiel Compton, M.D.
University of Cincinnati
Doctor of Industrial Medicine
University of Cincinnati

Alvin Davis, M.D.
Yale University
Doctor of Industrial Medicine
University of Cincinnati

John Carpenter Duffy, M.D.
Stanford University
Doctor of Industrial Medicine
University of Cincinnati

John William Durkin, Jr., M.D.
University of Vermont
Certificate in Industrial Medicine
University of Cincinnati

Ralph Woodworth Haswell, M.D.
University of Rochester
Doctor of Industrial Medicine
University of Cincinnati

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Doctor of Industrial Medicine
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James D. Thornton, M.D.
Johns Hopkins University
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Russell Floyd Brace, M.D., 1935
University of Buffalo
Master of Industrial Health
Harvard University

Frank DeNiord Brent, M.D., 1938
University of Western Ontario
Master of Industrial Health
Harvard University

Milan Rastislov Mateyka, M.D.
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Master of Industrial Health
Harvard University

Lt. Comdr. David Minard (MC)
USN
University of Chicago
Master of Industrial Health
Harvard University

Jerrold Jules Schwartz, M.D., 1951
University of Chicago
Master of Industrial Health
Harvard University

Byron Kent Wilson, M.D., 1951
University of Utah
Master of Industrial Health
Harvard University

Hugh Chavern, M.D., 1948
University of Pittsburgh
Master of Public Health
University of Pittsburgh

Candidates for Degrees

Robert J. Halen, M.D., 1948
University of Pittsburgh
Master of Public Health
University of Pittsburgh

Edward B. Headley, M.D., 1949
Johns Hopkins University
Master of Public Health
University of Pittsburgh

Haruo Katsunuma, M.D., 1941
Tokyo Imperial University
Master of Public Health
University of Pittsburgh

John F. Osterritter, M.D., 1950
University of Pittsburgh
Doctor of Philosophy
University of Pittsburgh

George Roush, Jr., M.D., 1951
Washington University
Master of Public Health
University of Pittsburgh

Joseph Tauber, M.D., 1930
University of Prague
Master of Public Health
University of Pittsburgh

Those Decisions

WHY has the business man, who has such an extraordinary record of achievement in other directions, done so poorly by himself in the matter of ultimate personal concern? One reason is that he drives himself too relentlessly—works too hard, relaxes and sleeps too little. Worry, and the stress that comes from making constant decisions, cause the adrenal glands to release into the bloodstream hormones which quicken the heart and increase blood pressure. More than half the business men who will die this year will die because of heart disease. To survive in a highly competitive world, today's business man has to live at a rapid pace. His wife, his associates, his physician may advise him to slow down—but the fact is that he has no great yearning to go fishing, relax in a hammock, or take up shuffleboard. Even so there are things he can do for himself. The most important is the annual physical examination. Until World War II, not more than a handful of large companies urged or required executives to take annual physicals. Pressures exerted on business by war took a grim toll of top executives, and, largely as a result of costly war experience, scores of companies inaugurated annual physicals for key men. Such examinations have obvious benefits. If a man knows trouble is brewing—trouble which may cost him his life—he is almost sure to take steps to prevent it.

—From "Beating the Odds on Executive Mortality," by J. D. RATCLIFF, in *Nation's Business*," quoted in *The Management Review*, February, 1953.

An Industrial Diagnostic and Preventive Medicine Program

SURVEY OF 526 PATIENTS

DOROTHY I. LANSING, A.B., M.D., Philadelphia

THIS is a study of 526 women who voluntarily participated in an industrial diagnostic and preventive medicine program. Table I shows their age distribution and Table II their distribution among the various job categories.

This program was offered to the employees of the company as a whole, to its clerical workers, its creative and editorial personnel, its administration and supervisory section, and its workers involved exclusively in the manual labor of the pressroom and the bindery.

Many more employees have passed through the program than are included here. The individuals in this study were chosen because they were examined exclusively by the author of this paper; hence, the philosophy and the observer are the same in all 526 examinations. The patient-approach, the examination routine, and the method of presentation of preventive health practices were held, insofar as possible, to a standard. Thus each woman in this series was examined by one physician only, who had several definite goals in mind for her.

TABLE I.
AGE DISTRIBUTION COMPARED WITH EMPLOYEE DISTRIBUTION

Age Group	Number	% of Total Employees
16-19	15	1.9%
20-29	255	11.4%
30-39	99	14.6%
40-49	118	25.3%
50-60	39	20.2%

TABLE II.
JOB DISTRIBUTION OF 526 PATIENTS

Job Category	Number	% of Total Patients
Clerical	248	47.1%
Editorial	25	4.7%
Research	33	6.2%
Secretarial	103	19.6%
Manual	74	14.0%
Supervision	25	4.7%
Administration	18	3.4%

Organization of the Program

THE industry under discussion has for 40 years or more maintained an emergency medical service in the form of a dispensary as well as some form of pre-employment examinations. When the health maintenance program was instituted, a form letter was sent to all employees and the supervisory people were informed by personal talks and memoranda from management. About one-fifth of the employees volunteered to participate in the program.

The examination procedure was so arranged that all of the laboratory data, together with the chest x-ray reports and the electrocardiogram readings, were available at the time the physician interviewed the patient. We found that this reversal of the usual order of procedure made for smoother health counseling. An electrocardiogram was done on all patients age 40 or over, using the Cambridge Electrocardiograph, and routinely nine leads were used: I, II, III, AVR, AVL and AVF, and three precordial leads: IV, V, and VI. The chest x-ray was taken on a Model P-2, Type 1 PR, Photo-timer, which results in a 4 x 5 individual film for each patient. These examinations were interpreted for us by a cardiologist and a radiologist, respectively.

The hemoglobin levels were done by the technique using 0.1 N HCL, and a photo-electric colorimeter with a commercially prepared standard. Blood and RH typing was done with serum obtained from the Children's Hospital Blood Laboratory. The serological method used was the Kahn. Red blood cell counts, white blood cell counts and differential, and color indices were taken. Complete urinalyses were made on morning and evening specimens. These tests comprise the basic diagnostic laboratory routine. If indicated, blood sugar levels, sedimentation rates, and basal metabolism tests, on a Sanborn metabolator, were also available.

After the performance of the initial diagnostic examination, those who were interested in yearly health check-ups were then planned into the routine as such, and employees who were hired since the original announcement were approached by the form letter method. We emphasized in the letter that our purpose was in no way designed to replace the employee's personal or family doctor. If anything, it would be helpful to him; and it was emphasized that we were desirous of communicating the results of our examination to whomever the employee named as her family physician.

The performance of the laboratory tests prior to seeing the physician placed these medical techniques uppermost in the minds of most of

From the Medical Division, Curtis Publishing Company.

the participants. Because of the anxiety generated in seeing a doctor in many patients, quite often the patient felt that no harm was done in terminating her survey immediately upon completion of her laboratory tests. However, the convenience of having the test results available at the time of the physician's examination far outweighs whatever advantage might be gained in having the employees see the physician first. That would definitley eliminate the "doctor-shy" employees, practically before anything at all could be accomplished.

The program was also organized so that the interview and examination by the doctor would be leisurely and unhurried. One and a half hours of time were allotted to the first examination. This point is stressed because we believe this particular health survey to be unique in this time feature.

Interview Techniques

THE maximum rapport with the patient was aimed for. The interest in each patient was not theatrical but sincere. Here, indeed, are time enough and opportunity for the practice of the art of medicine, and this is the major reason for the satisfaction that this particular type of medical practice can hold. It may be somewhat paradoxical but it is nevertheless true that the industrial physician can really practice medicine even though he or she does not hold the favored position of the personal or family doctor. We are not hurried, and we do not by-pass the smallest problem harassing the patient or the most foolish of questions. The opportunity to do this more than makes up for any lack of such positive nature in the physician-patient relationship as may develop through treatment by the family doctor.

In the interview, it is stressed that we do not "treat" the participants in this program. Any treatment that may be indicated by the findings from the examination is done by the physician chosen by the patient.

With these considerations in mind, let us actually "see" a patient. Complete personal and family data, both medical and social, are recorded. The dietary habits are minutely examined and, if they are incorrect or unwise, explanatory suggestions are given at the time of questioning and discussion. The individual's habits and her interests in life are inquired into. Here, promptings regarding creative usefulness and broad interests are given; and if the patient is over 40, a discussion of the medical and social problems of growing old is undertaken, with the focus on the acquisition of many interests and activities. A standard medical history is then obtained, and the current status of the patient with regard to her family physician is learned. Then, as the physical examination progresses, more preventive health education is brought in. All of the woman patients were taught self-examination of their breasts, and were given a copy of the illustrated pamphlet on this subject put out for lay use by the American Cancer Society. All were taught the high regard of the medical profession for routine semi-annual pelvic examinations from age 35 onward. Any demonstrable pathology at the time of physical examination would become a topic of discussion from both an explanatory and a preventive-medicine point of view.

Following the completion of the work-up of the patient, a letter was sent her at her home recapitulating the physical findings and the medical advice. If the patient desired it, or if the pathology merited it, we likewise corresponded with the family physician with the patient's consent, giving the complete data on the history, the examination, and the laboratory work.

If the individual participant was in need of further diagnosis and therapy, and had no family physician, we would suggest a physician for specialty consultation on the immediate problem.

When serious pathology was discovered at the time of the examination, such as the suspected existence of uterine carcinoma, we endeavored to see the patient again in order to impress upon her the need for competent medical care in her case, and to ascertain whether she followed the advice given. This particular "tagging" of the individual problem-patient, or the patient in whom the diagnosis was sufficiently serious to warrant making sure that she followed the medical advice, was accomplished by means of a "blue slip." (We worked out an 8 x 6 follow-up form which we chose to have printed on blue paper.) The "blue slip" system enabled the future date of seeing the patient to be filed for automatic recall at the proper time. Each "blue slip" carried the pertinent data on the problem at hand. We felt that the employees were impressed by the fact that the doctor thought enough of them to want to make sure that the trouble was corrected, and therefore kept track of them and their problem.

Our interview and educative methods thus might be described as firm but friendly, interested but never coercive; and the actual participation was held on a cheerful plane.

Results

WE DISCOVERED that a majority of the individuals who participated in our health program did so because they were fearful of certain conditions or symptoms they had observed in themselves.

The true concept of preventive medicine is hard to convey. We have found that the use of some clichés helped us in talking to the individual participant. For example, the proverb that "an ounce of prevention is worth a pound of cure," is easy to understand and makes sense in its simplicity; and the term "check-up" has appeal to the laity.

Tables I and II show the composite of the patients who were seen. Although, numerically, the

20 to 30 age group was the largest, it will be noted that, percentage-wise, in comparison with the number of individuals employed in that age category, their participation was not half as good as in the 40 to 50 age group. These figures are interesting with relation to participation in a health program held strictly on a voluntary basis, as is the program under discussion.

TABLE III.

Status	Pelvic	No Pelvic	Percentage
Married	170	48	77.9%
Unmarried	162	146	52.5%

We made a record of the percentage of pelvic examinations obtained in this series. These pelvic examinations were voluntary; they were performed by a woman physician. Table III shows that the marital status did somewhat affect the desire of the patient to be intimately examined, but that about half of the single women wished the examination to be done even though the examiner did not hold the favored status of the personal or family physician. This is important because so often the unmarried status is used as an excuse for an incomplete diagnosis.

If a pelvic examination was not wanted, the subject was not extensively discussed with the woman who was under 35. If she was over 35, she was told about the merits of a pelvic examination and the silent nature of serious pelvic diseases, until it was thought she understood the nature of her responsibility to herself.

Since we are not in the practice of internal medicine or any other specialty, and we do our diagnostic laboratory work on a screening basis, the variety of actual diagnoses was not at all great. If a duodenal ulcer was suspected, we could suspect but never diagnose. The pathological data of this study, therefore, will not be profound. Of interest, perhaps, will be the type and incidence of the pathological findings that were obvious to the examiner but totally unknown to the patient.

The existence of allergies was one health impairment that the patient was unable to comprehend by herself. There were 40 such cases. It was difficult to explain to the patient what an allergy was, and we enlisted the aid of an excellent pamphlet on the subject prepared by the Metropolitan Life Insurance Company, but we do not feel that we had much success.

The largest group of unknown disease processes, was that of the 95 women who had cervical pathology. The total of pelvic pathology was much higher, for there were 27 cases of abnormal uterine findings on pelvic examinations, and 21 cases of demonstrable vulvo-perineal pathology. This makes a grand total of 143. There was, however, some overlapping in this total of cases. There were also 12 women with marked menstrual abnormalities or inter-menstrual bleeding, and no demonstrable physical cause present on pelvic examination.

Spinal deformities were the third largest group of disease entities unknown to the patient, with 15 cases present. These consisted of moderate to severe kyphosis, scoliosis, or kypho-scoliosis, totally unobserved by the individual.

It was noted that many patients self-diagnose their own status as that of "anemia." The laity is very conscious of anemia, and seems to be always worried about it. Our laboratory data showed only nine women out of 526 with a hemoglobin under 12 gm. %, and of these, the lowest value was 10.89 gm. %.

We made, as observed above, constant effort in the field of breast examination, and while there were seven women with pathological findings, not one of these was a new case. All were known cases, under the care of a family physician.

It was interesting to discover that 24 of our patients had a diabetic parent, and 22 others had grandparents, or siblings, who were diabetic. We uncovered four cases of early latent diabetes mellitus among our participants.

The most common fault in our participants was the habit of a poor diet. This may be due to the fact that a large proportion of the women seen were in the 20 to 30 age group. We classified only those patients with an extremely poor diet, to get a total of 58 women. Eleven of these suffered from severe constipation problems directly attributable to their poor dietary habits. Many of the young women examined ate no breakfast at all, with an eye to their figure. Some women assiduously avoided drinking water during the day because they were too embarrassed, or did not wish to be bothered with going to the bathroom. Four of the patients said that they did not drink water because it nauseated them; and, needless to say, these four had severe constipation problems. Of the 526 patients, nine were true laxative addicts.

Of all the screening electrocardiograms performed on a routine basis, only four exhibited evidence of myocardial pathology. The chest x-ray survey showed three patients with the presence of old inactive tuberculosis that would require further supervision and study. It is interesting to note that the screening laboratory tests produced, therefore, only seven unknown cases of disease entities, whereas the physician uncovered many times that number of pathological problems.

There were 75 women in this series who had emotional or mental difficulties of a moderately-severe to severe nature. We found six with possible endocrine dysfunctions. Twenty-two of the patients were hypertensive, and a third of the 22 were overweight. We had 48 women in all who were overweight by 20 pounds or more. Only three patients were grossly underweight. The excessive use of tobacco and coffee or tea was found in nine of the women. We do not feel that our sampling presents an accurate cross-section of the working women, since a majority of the participants took part in our program be-

cause they had a medical problem. This automatic patient selectivity renders our sampling biased. We present the data (Table IV) for their interest, and wish to comment that the nature of our organization is such that we can not avoid being victimized by hypochondriacs.

We feel that we were able usually to obtain a thoroughly reliable history, although sometimes, as in the case of venereal disease, we could not elicit a positive history because the patient was fearful that something in it might cause her to lose her job. Such deficiencies in our work are, at this time, impossible to overcome. Over a longer period of time, however, with repetition of the health examinations, they will gradually become minimal.

TABLE IV.
ABNORMAL HEALTH FINDINGS

1. Acne vulgaris	12	2.3%
2. Acne rosacea	4	0.7%
3. Allergies	40	7.6%
4. Anemias	9	1.7%
5. Blepharitis—chronic	4	0.7%
6. Cervical pathology	95	18.1%
7. Aural infections	11	2.1%
8. Emotional maladjustments	75	14.2%
9. Dietary difficulties	58	11.0%
10. Hypertensive	22	4.1%
11. Spinal deformities	15	2.8%
12. Overweight by 20 pounds	48	9.1%
13. Underweight by 25 pounds	3	0.5%
14. Dental pathology	36	6.9%
15. Uterine abnormalities	27	5.1%
16. Vulvar diseases	21	3.99%
17. Total pelvic pathology	143	27.1%
18. Mammary disease	7	1.2%
19. Laxative addiction	9	1.7%
20. Diabetic family history	46	8.7%
21. Early latent diabetics	4	0.7%
22. Endocrine dysfunction	6	1.1%
23. EKG evidence of disease	4	0.7%
24. Chest x-ray evidence of diseases	3	0.5%

Comment

INDUSTRIAL medical surveys have been made in the past, but our particular approach and goals and the time allotted to the patient interview afford some observations which may be of interest.

Preventive medicine is one phase of the art of medicine that is relatively time-consuming for the physician to perform, and, if the patient is not in a receptive frame of mind, difficult to practice successfully. Patients, in general, resent lectures but they do enjoy interested help. This is a fine line of demarcation but it is an extremely important one to note in making individual health education talks. A great deal of resentment can be generated if the patient feels she is being lectured to.

If the record of the pathological data obtained in this study of 526 women is examined, it will be noted that the interview and the examination by the physician are far more important than the multiphase laboratory screening tests. Patients or people, in general, are not very self-observant; for it is seen that moderately severe deformities of the human spinal column go unobserved by the possessor.

Since the patients in this study are women, it is not surprising that most of the pathology centers around the female pelvis. In this group, the largest number of cases were those of cervical infections, erosions, ectropion, and endocervicitis.

We found that hay fever, rose fever, skin rashes, nasal polyps, and gastro-intestinal symptoms of an allergic nature were most often misinterpreted or self-medicated by the patient. Because of the periods of freedom from symptoms, advice of a preventive nature concerning allergies was hard to get across.

We have defined overweight for this particular paper as being 20 pounds or more in excess of the normals for a given height and body build as presented by the Metropolitan Life Insurance Tables of 1943.

The incidence of overweight women in our series was roughly 9%. Underweight was more difficult to compute. Ten to 20 pounds underweight makes a fashionable figure in this day and age; therefore, 25 pounds underweight was set up as an abnormal figure. Only three such patients (0.5%) were found.

A special concern was shown in overweight problems; and if obesity was due entirely to poor eating habits, encouragement and interest were shown the patient in changing her eating pattern and losing weight.

The health survey work was beset with tenaciously held misconceptions, and the abuses of the program by the patients were interesting. The most common abuse consisted of the rather absent-minded disregard for the doctor's time. Frequently enough, patients would cancel their appointments for an interview with the doctor only five minutes before their scheduled time. This occasionally happened because of the large amount of anxiety generated about the interview and the examination. We were possibly a bit annoyed by patients who would try to induce us to take on the responsibilities of a family physician. This procedure would be accompanied by complaints of all sorts of hardships and imagined poverty. There were patients, also, who felt that we should pay for any treatment or diagnostic work done immediately thereafter by their own physicians.

There is a belief among the laity that laboratory tests and x-rays are magical processes whereby a decision can automatically be given about themselves. The doctor, in other words, is not a necessary part of a health survey. This is a view of modern medicine which is tenaciously held in some quarters, and it is often difficult to convince the patient that tests are subject to errors and merely give specific information which must be interpreted. Thus in our series there were a number of patients who wanted nothing more than the tests, and not only did not wish to see the industrial doctor but also did not have a personal physician.

Individualized teaching of good health and preventive medicine practices presents its own

problems. These are apparent when the presentation is held to a standardized approach with reasonable allowances made for the language barrier and intelligence. The talks would often generate anxiety on the part of the patient. In three or four neurotic patients, this anxiety was severe.

However, in order to convey the usefulness of health check-ups it appears to be necessary that some anxiety be generated. It can always be channeled effectively.

Education on the problems of aging was sometimes met with great resistance and antagonism. There are many people who do not wish to be aware of the obvious fact that they, like everyone else, are aging. There are always some women who consider it presumptuous for a physician even to discuss such a matter.

The most interesting reaction to our educative efforts was the presence of that superstitious belief of our modern age: intelligence is everything. Intelligence, to these individuals, is the magic amulet that protects one from all the ills that flesh is heir to. Usually this belief is held without making the distinction between intelligence and wisdom. This type of person is naturally antagonistic to health teachings, and regards the entire process as extremely insulting to his mentality.

The true effects of our advisory and educative efforts will not be known for some years until a large number of repetitive check-ups have been done and the results and the patients' comments have been sorted and collected.

Summary

A SURVEY was made of 526 women workers from all types of jobs as part of a preventive health program.

The program consisted of multiphase laboratory screening tests and an adequate history and physical examination by the physician.

The pathological entities that were discovered by the physician far out-numbered those discovered by the tests alone.

Problems of attitude and of communicating preventive health practices to the patients are discussed.

Conclusion

1. INDUSTRIAL medicine offers the ideal opportunity for health education and preventive medicine.

2. Industrial health surveys reveal many interesting pathological conditions totally unobserved by the patients.

3. In surveys by a woman physician who is a total stranger to the patient, the percentage of pelvic examinations may be high.

4. An industrial medical program should provide sufficient time for the practice of the art of medicine.

Reference

1. MCCAHAN, J. F.: Medicine + Industry = Occupational Health. *New England J. Med.*, 247:13, 470.

NOTE: The EKG's in this study were interpreted by DR. J. E. STRANG. The chest x-rays were interpreted by DRS. J. OWSLEY, HENRY WOLOSHIN, and CATHERINE R. BOUCOT. This paper was prepared under the supervision of DR. GLENN S. EVERTS, Medical Director, Curtis Publishing Company.

Science Marches On

ALMOST every physician has encountered at some time in his career the patient who requests something she can "take" to interrupt an unwanted pregnancy. Requests for something "to take" to prevent conception have not been numerous since the primary notion of contraception for many years seems to have been that it is accomplished either through abstinence or by means of mechanical devices or topically applied chemicals or by a combination of these three. Now, however, if the work of Benjamin F. Sieve ("A New Antifertility Factor," *Science*, 116:3015, 373 (October 10) 1952) is any indication an antifertility drug which may be taken by mouth may someday be available. This investigator has administered phosphorylated hesperidin to 300 selected couples specifically for a study of its antifertility effect. With but two exceptions, no pregnancies occurred during the course of the test period. The two failures occurred in couples who had failed to follow faithfully and without interruption the course of medication prescribed. Administration of the drug was simple, five tablets per day being required, two being taken at breakfast, one at lunch and two at dinner time. Both partners were required to take the preparation and a period of 10 days was needed for sufficient concentration to build up to prevent conception. If, at any time, the drug was discontinued on the part of either partner for as long as 48 hours, the 10-day period of medication must again be observed before sterility could be expected. The drug showed no apparent toxic effects in the couples studied and there was apparently no decrease in libido. In fact, a significant increase in the frequency of coitus was found in the group. When this news reaches the popular magazines, and it will, physicians will be deluged with inquiries. You have now been alerted. Prepare yourself. Science marches on.

—Editorial in *Arizona Medicine*, 10:3, 107 (March) 1953.

Industrial Noise and Hearing Conservation Programs

MEYER S. FOX, M.D., Milwaukee

THE observations and suggestions presented here are based upon practical experience with the hope that they may be of value to physicians approaching similar industrial problems. Realizing that situations found in any two plants may differ markedly, it is nonetheless felt that there are many basic similarities, both in the problems encountered and the solutions available.

The following questions are frequently asked:

Is there a simple rule of thumb by which one can determine if the noises in a particular plant are potentially damaging to the workers?

How does one go about investigating the problem if dangerous noise levels are present?

What measures should be instituted to obtain a practical program of hearing conservation?

The physical characteristics of sound and its behavior as well as the effects of noise upon the human ear have been thoroughly described in many excellent papers and proceedings published during the last few years.[1-12]

The following factors, discussed in a previous publication,[13] influence the degree and extent of hearing impairment found in noise deafness: (1) intensity of noise; (2) frequency spectrum of the noise; (3) period of exposure; (4) individual susceptibility to acoustic trauma; (5) age of the subject; (6) co-existing ear disease; (7) character of the surroundings in which noise is produced; (8) distance from source; and (9) position of each ear with respect to sound waves. The four most important factors of those listed above are: (1) the intensity of the noise, (2) the frequency spectrum of the noise, (3) the duration of exposure, and (4) the individual susceptibility of the workers involved. In general it can be stated that susceptible individuals exposed to noise levels of high enough intensity over a sufficient period of time will sustain appreciable hearing losses. Although there is disagreement among authorities as to 'how much is too much?' and 'how long is too long?', it is known that the above statement is true and that the problems involved cannot be wished away.

A useful rule of thumb to determine whether or not noise in a given plant is at a hazardous level is this: If one can not carry on a loud shouted conversation at a distance of one foot, when activity is at its usual level, then it is likely that a noise problem exists. If having determined by this rule that there is a definite noise problem, one can proceed more accurately to measure the noise level with his choice of several measuring instruments currently available. It is important that the capabilities and the limitations of each of the common instruments be understood. Sound level meters do not measure the frequency or pitch of the sounds which go to make up the total noise, but give only an over-all measurement. A much more accurate and informative analysis of sound is to be made only through the use of instruments which measure the many components of different frequencies which are present in noise. For this type of

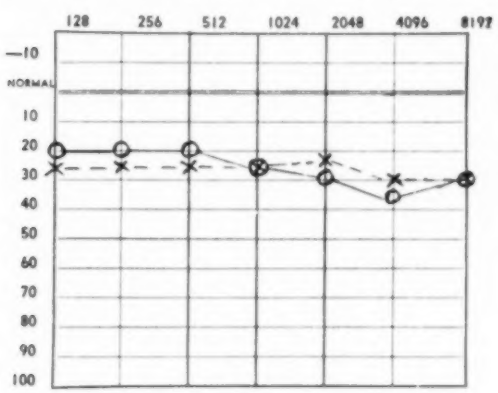

Fig. 1.
Simulated deafness due to impacted wax. Hearing curve was normal after the wax was removed.

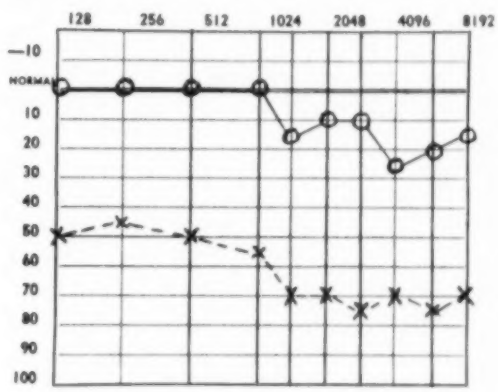

Fig. 2.
"Shadow Curve" is the result of total loss of hearing on left ear and the failure to use masking on right ear when testing the left ear.

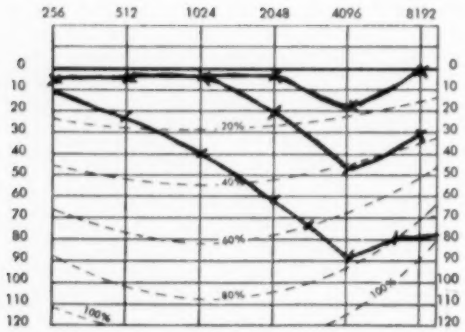

Fig. 3a.
Audiogram of various stages of acoustic trauma. (House[16])

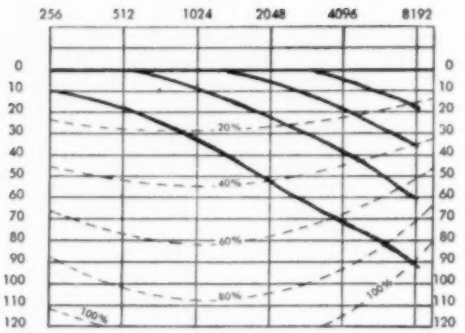

Fig. 3b.
Audiogram of various stages of presbycusis. (House[16])

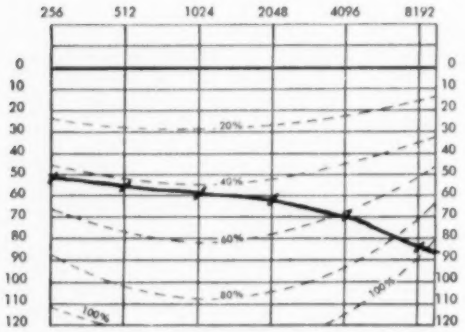

Fig. 4a.
Advanced nerve impairment with very short history of noise exposure. Diagnosis cannot be established with certainty. (House[16])

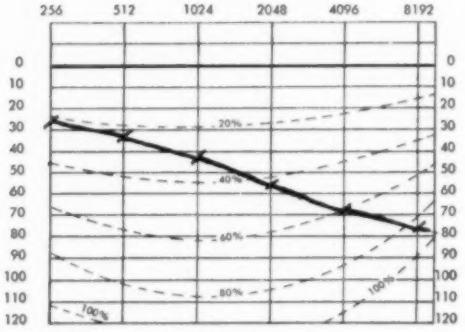

Fig. 4b.
Bilateral advanced nerve loss with history of noise exposure and of similar early deafness throughout family tree. (House[16])

analysis, a wave analyzer is needed which will separate the noise into, and measure most of, its principal components. For sudden, impact sounds, like those produced by pneumatic, or drop hammers, punch presses and shearing machines which generate such swift pulses or pressure waves that they can be measured and analyzed but poorly with either of the above instruments, the cathode ray oscilloscope combined with high speed photography is required. A recent publication, "Industrial Noise Measurement—Science or Art?" by Dr. Charles Williams,[14] illustrates the difficulties involved in accurately assessing this type of impact or percussive noise.

Having determined that a noise level hazardous to hearing is present and having measured its characteristics, one is faced with the problem of protecting the hearing of the workers involved. A good hearing conservation program has three primary objectives:

1. To conserve hearing and prevent hearing loss among workers.
2. To prevent economic loss to the company as a result of industrial hearing loss claims.
3. To gather scientific information and data in order to facilitate the accomplishment of the two foregoing objectives.

In order satisfactorily to perform the hearing tests and studies described below, it is necessary to build or obtain a quiet or sound treated room in which the extraneous noise level is below 50 decibels. In such a room, it should be possible to perform audiometric tests which if accurately done and properly analyzed constitute one of the basic procedures of a good hearing conservation program. For it should be realized that in order to prevent hearing loss in workers and economic loss to employers, it is necessary to know the status of the worker's hearing at the time he begins his employment. In those cases where it is desired to employ a worker who has a marked loss for pure tones, the worker should have speech tests given him as well. The reason for this added precaution is that before too long hearing loss claims will be evaluated by speech audiometry, rather than by the presently-used pure tone audiometry.

Otological observations are important. These usually tend to correlate with, and corroborate the findings of the hearing studies. Such clinical pictures as those presented by otosclerosis, chronic middle ear infections, wax accumulations and nerve degenerations will often be seen. The employer should not be held liable for hearing loss claims arising from such ear pathologies which are totally unrelated to industrial noise ex-

posure. Audiograms illustrating the need for otological consultation and interpretation are shown in Figs. 1-4.

The pre-employment examination record should show the audiometric and otological findings, and pertinent items of medical and industrial history and should be studied when assigning the new worker to particular operations and work areas. Young applicants who show perceptive or nerve type losses, if employed, should be most carefully placed and most frequently checked. On the other hand, workers with pre-existing conductive losses are better risks in noisy environments than many 'normals' since their conductive lesions act as 'built-in ear plugs.' Yet it is a common practice in many plants, to reject any applicant who shows a hearing loss of any kind and thus to perpetrate an injustice upon worker and employer alike.

All workers exposed to high intensity noise levels should have periodic re-checks of their hearing. The frequency of repeated audiological examinations is determined by experience, by the loudness and type of noise to which workers are exposed, and by the hearing status of individual workers. Those suspected of being poor risks are of course more frequently examined. A chart for the numerical and graphical recording of the results of periodic audiometric tests as well as the occupational and medical history is shown in Fig. 5. This chart enables one quickly to determine any changes in hearing acuity as revealed by changes in the audiometric findings from test to test.

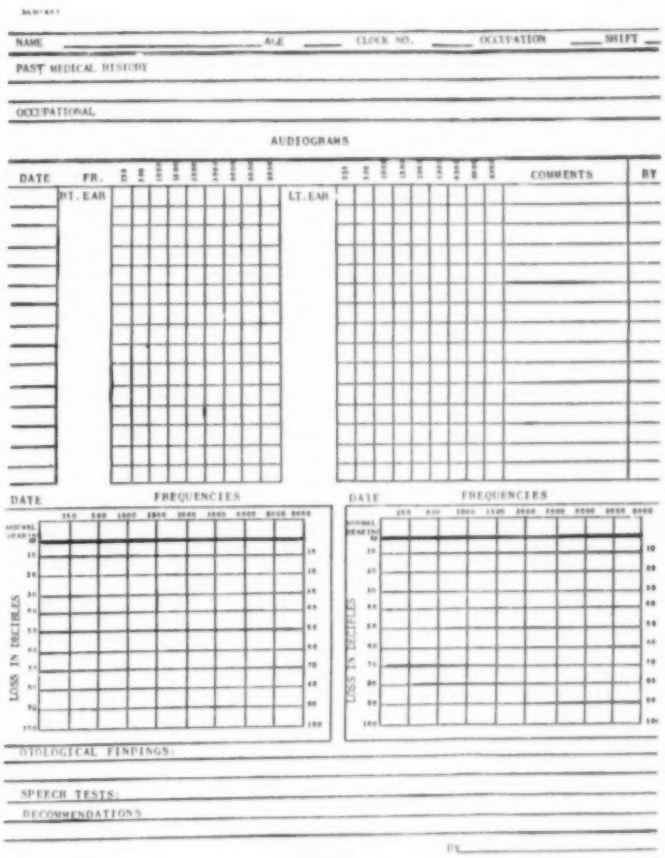

Fig. 5.
Author's chart for recording medical and occupational history, multiple audiograms, and otological findings.

It goes without saying that the ideal hearing conservation program would entail the removal of the noise at its source, i.e., it would entail reducing industrial noise through (1) abatement of noise by direct treatment of noise generating machines and devices, and (2) further diminution through acoustic treatment of the work areas. The extent to which these measures can be expected to decrease noise levels varies with the machines, the operations and the physical plant, and is a matter better left to the acoustical and industrial engineers.

In areas where noise levels cannot be effectively reduced by means presently available, the hearing of workers can be protected by especially designed devices. These are constructed from various materials in many designs. Rubber, cotton (both plain and treated), gauze, sea-weed, wax and plastics have been shaped to be inserted as plugs into the external canal. This type of plug can be used alone or in conjunction with the ear-muff type of ear protector. A helmet is also available which incorporates sound-reducing ear pieces. It has been the writer's experience that the big problem is gaining the acceptance and cooperation of the workers and of convincing them that it is not a sign of weakness but only good sense to protect their hearing with defenders. The worker must also be shown how to wear his ear plugs correctly and reminded to wear them regularly. Audiometric re-checks often reveal that a worker is either highly susceptible or careless about the proper use of protective devices. Wheeler[15] has shown in his researches that the best attenuation possible with currently available ear protectors is between 35 and 40 decibels.

PROGRAMS discussed to this point are of the type in effect in the larger industrial installations where the services of industrial nurses and physicians are available. The success of the pro-

gram in these plants is dependent upon the extent to which these people have been properly trained. The writer is fully cognizant that many firms have purchased audiometers and have turned the problem over to their industrial nurses or health and safety personnel without their being properly instructed or supervised. The nurses or other personnel are usually instructed to make audiometric records to be filed for use in the event of legal claims which might arise later. Not only does this writer question the accuracy of these records and their acceptance in legal proceedings but he feels that the act of merely recording figures without interpretation is not good medicine.

SMALLER plants can use similar programs scaled down to their needs. The services of industrial and acoustic engineers, audiologists, and physicians interested in the problem may be required. The gathering of scientific information and data begins with the first efforts of hearing conservation. Later the program can be broadened to include research on susceptibility to noise damage and the rate of recovery from temporary threshold shift as well as other research problems which may arise. It is expected that eventually it will be possible through especially designed tests to predict which applicants are most susceptible to noise damage, and to state more accurately the time required to recover from the temporary portion of a hearing loss. It is suggested that workers having a known hearing loss who are forced to stay away from industrial noises because of illness, injury, retirement, or protracted lay-off be periodically examined to determine the length of time required to recover from auditory fatigue.

If this writer seems to be too insistent and too partial to the need for properly supervised hearing conservations programs, this is due to his experiences with these matters. He has seen irreparable damage done to human hearing which could have been avoided. He has seen workers excluded from noisy working areas because of a type of hearing loss which actually made them better suited to work in noise, and he has seen money wasted upon programs which were inadequate, unscientific and misleading.

Dr. Howard House,[16] who is chairman of the Sub-committee on Noise in Industry has stated: "Hearing is a priceless asset .... conservation of human hearing is worth-while." Not only does this writer agree with this statement but he also feels that it is morally, socially and economically unwise to do anything else.

(208 East Wisconsin Ave.)

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Individual Initiative

THERE have been a number of production teams coming over here from Europe to make surveys of American production methods and personnel programs. One thing that amazes these people from abroad is the provision made for the health and safety of employees in American plants. And the surprising thing to them is the extent to which this is accomplished, not by laws and regulations, but through the individual initiative and voluntary efforts of employers and employees. We are so accustomed to this, we take it so much for granted, that we fail to appreciate its fundamental importance.

—From an Address by GEORGE A. JACOBY, Director of Personnel Services, General Motors, published in *Detroit Industrial Nurses*, March, 1953.

Inorganic Carcinogenic Agents

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A RECENT survey[25] of current research on inorganic chemicals as anticancer agents shows the commanding position given to radioactive isotopes. The present paper emphasizes the carcinogenic action of these new sources of irradiation.

The hazards of occupational cancer have long been the concern of government and industry. Hueper[18] made a critical review of the literature in this field in 1949. Much of the current research on the carcinogenic activity of chromium, beryllium, and nickel is prompted by the desire for more knowledge of the risks encountered in the handling of these industrially important metals.

Radioactive Isotopes

RADIOGOLD. Williams[27,28] is the author of two recent reports on the influence of Au^{198} on the incidence of hepatomas in rats fed azo dyes. In 1951 this worker and associates found that radiogold increased the incidence of liver tumors of rats fed dimethylaminoazobenzene. A year later Williams announced that rats fed 3′-methyl-4-dimethylaminoazobenzene suffered a high incidence of hepatomas when Au^{198} was administered by the splenic route. Hahn *et al*[15] produced liver cirrhosis with ascites by the chronic massive intravenous injections of the isotope in dogs.

RADIOCERIUM. Lisco and Finkel[20] have described the formation of neoplasms of the bronchial epithelium of rats following the inhalation of radioactive cerium oxide.

RADIOIODINE. There are five current reports on the carcinogenic action of large doses of I^{131}. Gorbman[12,13] in two publications describes the induction of hypophyseal growths in mice through subcutaneous administration of radiotoxic doses of radioiodine. Domiach[8] produced thyroid tumors with intraperitoneal injections of I^{131} in rats which had methylthiouracil and acetylaminofluorene added to drinking water. Goldberg and Chaikoff[14] reported similar results following a single intraperitoneal injection of the isotope. Neoplasms of the pituitary have been induced in mice[11] by subcutaneous administration of I^{131}.

RADIOPHOSPHORUS. Brues *et al*[6] concluded that P^{32} is comparable to x-rays as a carcinogenic agent when injected in mice. Koletsky and associates[19] induced osteogenic sarcoma and squamous carcinoma in rats with large doses of radiophosphorus.

Carcinogenic Action of Important Industrial Metals

CHROMIUM. Occupational cancer among workers in chromium plants is the subject of half a dozen current reports from government and industrial experts. Mancuso[21] in a survey of Ohio disclosed that the mortality from cancer in a chromium plant was 14.7 times that of controls. Two years later this same investigator[22,23] filed two reports showing that the lung cancer death rate among workers in a chromate plant was 15 times that of the general population in the same county.

Bourne and Yee[5] published their findings in 1950 confirming the mortality rate as 14.7 times that of non-exposed groups. In the same year Baetjer[1] attributed the bronchogenic carcinomas of the plant workers to sodium and potassium chromate or dichromate, and zinc chromate. In a companion study she[2] concluded from a statistical analysis of hospital records that chrome workers showed a higher incidence of lung cancers.

BERYLLIUM. The carcinogenic action of beryllium compounds has been tested on experimental animals in several recent investigations. Cloudman *et al*[7] noted the formation of bone tumors in mice and rabbits following the intravenous injection of zinc beryllium silicate. Barnes and associates[3,4] in two publications used metallic beryllium, beryllium silicate, and zinc beryllium silicate to induce bone sarcomata in rabbits by intravenous injections. Nash[24] reported similar results with beryllium oxide and zinc beryllium silicate.

Dutra and Largent[9] administered beryllium oxide intravenously in rabbits to induce bone sarcomas. A year later[10] these investigators with Roth recorded the same results when rabbits inhaled air containing the oxide. Hoagland *et al*[16] administered beryllium oxide and phosphorus intravenously to produce osteogenic sarcomata in rabbits. Sissons[26] recorded the induction of bone sarcoma in rabbits from beryllium compounds given intravenously.

NICKEL. Hueper[17] induced sarcomatous growths by parenterally injecting nickel powder into the femoral cavity, pleural cavity, and nasal sinuses of rats.

[ACKNOWLEDGMENT is made of the interest of DR. E. EMMET REID, Professor Emeritus, Johns Hopkins University, in this research. The original literature has been made available through the cooperation of the Army Medical Library and the Furman University Library.]

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Medicine in Industry

OCCUPATIONAL medicine, or industrial medicine, is not finger-wrapping, insurance medicine, compensation medicine, or surgery. Of course, the lacerated finger must be wrapped, the fractured bone set, and compensation administered. But occupational medicine is concerned with the faculties, capacities and deficiencies of the worker; it recognizes that a worker's production and happiness are based upon his state of health. Therefore, it must consider such factors as nutrition, mental hygiene, noise, lighting, vibration, ventilation, and a myriad of environmental influences. In the rise of preventive medicine, occupational or industrial medicine has assumed a foremost role as testified to by its case-finding program in tuberculosis, cancer, epilepsy, diabetes, heart disease and the like. In this regard it should be noted that the relationships of an occupational environment to cancer, especially pulmonary cancer, are just now being recognized....Occupational medicine has done more to relieve mental tension within the handicapped individual than has any other phase of medical practice. In the minds of too many doctors the concept of rehabilitation is nothing more than the restriction of function of an injured part or the fitting of a prosthetic appliance. Many years ago my good friend, Henry Kessler, introduced into industrial medicine practice the philosophy that we should not discard a worker because of a disability but rather that we utilize him because of his abilities; that a disabled individual can be stimulated to achievement far beyond that which would have been attained had no disability occurred....One of the great sources of tension in industry is the friction existing between management and labor. Medicine in industry acts as a lubricant to lesson such friction. The industrial physician is or should be a member of the industrial relations team, acting in a bipartisan capacity. The cause of labor strikes does not necessarily or always arise out of demand for higher wages, shorter hours or better working conditions. These demands often disguise more deeply rooted desires for a change in the human or social situation to which both management and labor leaders have been blind.

—From "This Age of Tension: Environment and Human Action," the Sommer Memorial Lecture, by RUTHERFORD T. JOHNSTONE, M.D., Portland, Oregon, October 8, 1952.

Industrial Dermatoses

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THE PURPOSE of this paper is to review in general the inter-related medical, sociological and economic problems resulting from the occurrence of various skin ailments among workers, and to consider in particular the difficulties stemming from occupational dermatoses.

The proper diagnosis, handling and final disposition of these cases may require the joint conference of any or all of the following: the company physician, the plant nurse, the consulting dermatologist, the industrial health agent, the safety director, the plant engineer, the machine designer, the chemist, the physicist, the insurance carrier, the social worker, the economist, the manufacturer, the personnel director, the departmental supervisor, the labor representative, the industrial attorney, and the compensation board officer. In these decisions each must contribute his true knowledge of the case at hand, and, when that is done, each must respect the honest opinion of the other. In such ways, we will establish a finer relationship between the various groups who, of necessity must work together, and we will better solve the health and/or economic problems which any disability creates for the employer and employee, and the consumer who depends on them for their produced goods.

The Employers' Concern in Industrial Dermatoses

THE concern of the employers in occupational dermatoses, as in other matters affecting industrial hygiene, is of both a monetary and altruistic nature. They have seen the market value of produced goods and services attain the phenomenal level of $256,000,000,000 in 1949[1] and have subsequently seen this rise further. Also, they have experienced the difficulty of finding worker replacements from the shrinking labor pool of this all-time high employment. Thus, they recognize that, in order to maintain such high production and earning levels, one must provide optimal protection for the physical, mental and environmental fitness of the worker.

Managements know that any work-absenteeism costs them in decreased production, lowered profits and possible material spoilage. If this lost time results from an industrial accident or disease, they have the additional expense of medical fees, drugs, possible hospitalization, and other miscellaneous items. If they have an undue number of claims on their benefit or compensation insurance, the carrier may regard them as an additional risk and increase the premiums. If the case goes to litigation, they are subjected to attorney fees and court costs. Thus, it has been estimated that the monetary loss to an employer is one and a half times greater than is the cost to the employee.[1]

Employers realize that they and all industry have lost a trained person, if the nature of the employee's disability requires a severance from the particular job. They further know it is often difficult and usually costly to be required to transfer a worker to another plant department. In a study in 1950, we estimated that a certain pharmaceutical company expended $250 per employee to conduct the pre-employment examination and rating and to carry through a 90-day training period.[2] Thus, if shortly thereafter something happened which necessitated the separation of an employee from the job, then the company had lost the money invested in that individual and was required to spend a like sum in placing another worker in the same assignment. The loss is beyond evaluation if the person is an efficient employee of long service.

Because of these monetary losses, both the employer and the employee are increasingly unsatisfied merely with the diagnosis and treatment of an existing ailment. With greater frequency they look to medicine and other interested groups to assign the exact cause for a disability, to adopt specific measures for the earliest possible cure, to give counsel on co-existing physical or functional difficulties, to aid in the solution of resultant economic problems, to rule on job continuance, transfer or separation, and to provide methods of prevention for these troubles. Some companies, in an effort to prevent any production lag, go so far as to treat even the non-occupational disabilities which occur in their workers.

Most industries have come to accept some form of industrial hygiene program. Larger corporations are capable of establishing more extensive set-ups which include a part- or full-time staffed medical dispensary, outside consultants in special medical fields, an intelligent employment officer, an alert safety director, cooperating plant departmental heads, careful pre-employment examination, adequate screening of applicants, specific job and general plant training programs, periodic check-ups of personnel, plant supplied

From the Department of Dermatology and Syphilology of Indianapolis General Hospital, The Alembert Winthrop Brayton Skin and Cancer Foundation and its allied P. C. Reilly Laboratory of Mycology, JOHN ERIC DALTON, M.D., Chairman. Read at the Annual Meeting of The American Academy of Dermatology and Syphilology, in Chicago, before the Symposium on Industrial Dermatoses on December 9, 1952.

and laundered clothing, protective attire in certain jobs, adequate hygienic and recreational facilities, proper suction and ventilating systems in production areas, closed methods of manufacture where needed, alarm check apparatus in hazardous locations, temperature controls in work sites, and other health and safety advances. All of these measures may not be possible for the operators of small plants, but they can obtain most of these things through part-time consultants in the various special problem fields. Studies have shown that such plans provide sizable savings for industry, over and above their operational costs, because of their striking reduction of industrial illness, work accidents, plant absenteeism and labor turnover.[1] However, we might note that certain groups have lately sponsored unsuccessful legislation to bar companies from using plant physicians, pre-employment medical examinations, and periodic physical check-ups. They contend that these violate the worker's right to select his own physician.

In view of the recorded decrease in industrial accidents and the reported increase in both industrial and non-industrial disease, the direction of a plant medical dispensary might be better served by an industrial internist, who has the privilege of outside special medical consultants, rather than by an industrial surgeon. At any rate, the physician who handles occupational medical problems should be experienced in such matters, because it has been stated that lost time is three to five times greater if a worker is treated by a doctor who is unschooled in seeing industrial cases.[1]

The Employees' Concern in Industrial Dermatoses

THE concern of the workers in any problem involving industrial health, is their income. In 1949 they saw the number of employed persons climb to 58,710,000 in this country, and they saw wages, salaries and supplements reach $140,555,000,000.[1] Since then, these figures have risen further, and the conscientious employee is vitally interested in any factor which may interfere with his ability to work and to earn.

Surveys on general disabilities among workers show that some type of ailment causes an average loss of nine days per year per worker;[1] that some disabling condition renders approximately 4,569,000 persons of working age unable to work on an average day,[1] and that the average annual wage loss due to illness amounts to 1.5 to 4.0 billion dollars.[1] Of course these studies apparently include disabilities of both industrial and non-industrial nature, but another study reveals that 90% of these episodes are non-occupational[1] and therefore the most expensive type of ailment for the worker. All of these studies point to the enormity of the health and economic problems of these people.

For an employee, disability creates a problem which will vary in degree according to the occupational or non-occupational character of the ailment, the age of the worker, the length of time in the particular trade and the accumulated seniority with the company. If he is new in the employment and if the trouble is ruled as work-associated, then the illness is covered by compensation and a transfer to another department or a separation from the job will not cause the loss of the higher wage scales gained after a longer experience. However, if the worker is long in the service of the trade and the company, if he has developed a high degree of efficiency and if the illness results from the job, then, although he is compensated for this episode, he still faces the penalty of a lowered income because of the necessity of a plant transfer to another job in which he has no trained skill, or a severance from the position in which he has developed efficiency and seniority. Lost time which is not covered by any type of benefits, can be catastrophic to him and his dependents.

The Consumer's Concern in Industrial Dermatoses

THE public also shares in the costs resulting from occupational disabilities. Naturally, the management-incurred expenses, such as lowered production, the operation of full or partial plant medical and welfare programs, and the payment of compensation or other benefits, are passed along to the consumer in the price of the finished product. Also, our general economy is affected by the reduced buying power of the worker and his family.

The Physician's Concern in Industrial Dermatoses

AS IN other medical entities, the physician's concern in industrial dermatoses is to establish both preventive and curative measures.

Through the history and the physical preplacement examination, the plant physician may sometimes find certain skin features in a work applicant, which render him either completely unsatisfactory or usable only in certain plant departments. In the general analysis of a person seeking employment, the medical examiner should take into consideration the several factors[3] which may predispose to skin irritation.

Age—Some authorities believe that young workers are more prone to develop industrial dermatoses. They say that a number of newly hired young workers react after a five-to-seven or more days "incubation period" following their first exposure to their new contactants, but that thereafter some of this group will lose their reactivity and become "hardened" to these substances. Fully to accept this theory, one must be certain that these skin eruptions did not result from an inexperienced self-exposure to primary irritants and that these cutaneous signs were of the nature of a sensitization-type reaction. On the whole, it is true that fewer industrial dermatoses are seen in older workers, but this may be due to the fact that their longer employment has taught them to be more careful in their exposures and that more of this age group are

in a supervisory capacity, which entails less contact with materials.

Skin Character—The manner in which a particular skin will handle external irritants depends on its type of cornified epithelium, its amount of sweat production, its amount of sebaceous secretion, its surface Ph and its pigmentation.

Normally, perspiration acts to dilute further and to render less noxious those water soluble contactants which are already in solution. Thus an individual who perspires scantily may be robbed of this protective mechanism. However, when sweat dissolves certain solid materials, which in their original state are innocuous, it may result in the formation of highly irritant substances. Furthermore, excessive perspiration may lead to maceration and surface breaks, making that skin more penetrable by chemical irritants and infectious agents. All of these phenomena can be further altered by conditions which either temporarily or permanently change the normal Ph of the sweat.

Likewise, the cholesterol and wax content of sebaceous secretion acts normally to supply a protective coating against cutaneous irritants. Thus, if this secretion is below normal, that skin is more vulnerable to agents which induce further defatting and, if sebum is present in excess, that integument is more reactive to extraneous oils, greases or waxes.

Negroes are seemingly less prone to occupational dermatoses than whites. Certainly they are less sensitive to ultra-violet light exposures, and occupational experience seems to indicate that they are less affected by solvents, dyes, irritating dusts, and plant poisonings. However, darker skins possess a greater tendency to keloid formation after even minor injury.

Among whites, the worker having a blonde, thin, dry skin probably has greater cutaneous reactivity than the person with a dark, thick, oily integument. The latter individuals will have more trouble in greasy occupations if they do not exercise meticulous care in the cleanliness of their skin and work clothing.

Sex—One often reads that women are more disposed to industrial dermatoses than men and in this respect an interesting study was done recently by Hinkle and Plummer.[4]

Diet—Several investigators have found that they can increase cutaneous sensitivity in laboratory animals by inducing either an acidosis or an alkalosis in that subject. Therefore, it is conceivable that this may also be true of human beings.

Other Diseases—Individuals who tend to have non-occupational skin diseases are seemingly more apt to develop industrial dermatoses. This may be because their scratching or rubbing favors the entrance of greater amounts of the external irritants. However, there does not seem to be a definite relationship between the people who have asthma, hay fever or other allergic diseases, and those who develop industrial dermatitis.

No patient in dermatology demands a more careful history taking, physical examination and other study than the one in whom an occupational dermatitis is being considered. Whenever possible, the examiner should have an experience in industrial dermatology, a first-hand knowledge of various manufacturing procedures, and an understanding of the different contactants. It is a gross injustice to all concerned for the physician to ask merely where they work and what they do and then to conclude summarily that the eruption is due to the occupation, that they should lay off work, and then should change their job upon recovery.

The history should carry the date upon which they entered their present particular job; the procedures at which they worked; the mechanical, physical, chemical, vegetal and biological agents, which they contacted at work and outside; the date upon which they first noted eruption; the site or sites at which it was first observed; the character of the rash at its onset; the changes which the picture has undergone; the local medicaments which were used from the plant dispensary or an outside source; whether other workers on the same job have a like trouble; and whether the patient has had similar or other skin difficulties in the past. Also one should secure additional history on drug ingestion, allergic phenomena, nervous stability, general cleanliness, methods of cleansing, diet, rest, and diseases of other systems.

Needless to say, the entire skin, hair, nails and accessible mucous membranes should be inspected because unexpected lesions, which were not admitted in the history, may be found to give the cue to the proper diagnosis. Furthermore, a careful description of the location and type of the eruption should be recorded for any future reference. Indicated regular and special forms of patch testing, with accepted published strengths of the materials, should be done after the acute phase of the disease is subsiding. At this point, may we digress to condemn the sometimes-encountered practice of the occasional physician who has the patient apply or read his own patch tests. Where a secondary fungal or bacterial infection is being contended as the cause or aggravant of an industrial skin disease, one must do cultures to prove or disprove this point. A few of these cases will require a skin biopsy or other indicated laboratory procedures to arrive at a fuller knowledge for diagnosis.

The physician who is asked to rule upon the occupational or non-occupational nature of a disability accepts considerable responsibility. He must decide if the patient can be treated while remaining at work, if he must be laid off temporarily for proper care, if he will have to be separated from the particular job, and how soon he may return to employment. These questions are of economic importance to all concerned.

The examiner must insist on being given the time and privilege to use all the clinical and laboratory measures necessary for arriving at a diagnosis. The company or insurance carrier should agree to be financially responsible for the case until its occupational or non-occupational character has been decided. In this respect it is well to remember that a negative report on liability can be quite valuable, if a controversy develops. The physician must keep accurate records of such case studies, because of the possibility of subsequent litigation. Unfortunately, there are still a few industrialists and an occasional insurance carrier who do not desire anything declared to be of occupational origin, and there are some workers and a limited number of attorneys who want everything ruled to be of industrial causation. These influences must be unheeded, because a medical examiner may be called upon to defend his earlier reported opinion in court.

Incidence, Lost Time and Cost Factors

FULL data on the incidence, lost time and cost factors in industrial dermatoses are difficult to obtain. About 20 Federal, state or private agencies, who, we thought, would be gathering such information, were queried on these matters. However, only five of these groups had data which were usable in this study. Moreover, these records were not complete, and this is seen particularly in the cost figures where only compensation and medical care are accounted for and no consideration of decreased production, material spoilage, lost wages and other pertinent

TABLE I.
ABSENTEEISM DUE TO COMPENSATED OCCUPATIONAL DISEASES AND OCCUPATIONAL DERMATOSES AS COMPILED FROM LATE ANNUAL REPORTS OF SEVERAL STATES

State	Period	Total Days Lost Due to All Occupational Diseases	Total Days Lost Due to All Occupational Dermatoses	Average No. Days Lost per Case of Occupational Dermatoses	% Total Occupational Disease Days Lost Due to Occupational Dermatosis
N.J.[7]	1951	Poisonous Substances 72298 (251 Cases) Corrosive Substances 36662 (295 Cases) Occupational Diseases 270081 (692 Cases) 379041 (1238 Cases) Average Days Lost 306	Poisonous Plants 1741 (38 Cases) Corrosive Substances 36662 (295 Cases) Occupational Dermatitis 44315 (544 Cases) 82718 (877 Cases) Average Days Lost 94	94 Days	22%
Wash.[8]	1951			57 Days	
Wis.[9]	1951	119131	Dermatitis 10564 (505 Cases) Poisonous Plants 1148 (84 Cases) 11712 Total (589 Cases)	20 Days	10%

TABLE II.
PART-COSTS OF COMPENSATED OCCUPATIONAL DISEASES AND OCCUPATIONAL DERMATOSES AS COMPILED FROM LATE ANNUAL REPORTS OF SEVERAL STATES

State	Period	Reported Cost on All Occupational Disease Cases	Reported Cost on All Occupational Dermatoses Cases	Average Cost of Occupational Dermatoses Cases	Percent of Occupational Disease Cost Due Occupational Dermatoses
Ill.[6]	1951	747 Cases Filed 641 Cases Settled With $270,175 Compensation	397 Cases Settled With $54,453 Compensation	$137 Compensation	20% of the Compensation
N.J.[7]	1951	Poisonous Substances $138,119 (251 Cases) Corrosive Substances $94,018 (295 Cases) Occupational Diseases $319,852 (692 Cases) $551,989 (1238 Cases)	Poisonous Plants $4,551 (38 Cases) Corrosive Substances $94,018 (295 Cases) Occupational Dermatitis $123,732 (544 Cases) $222,031 (877 Cases)	$253 Compensation	40% of the Compensation
Wash.[8]	1951			$171 Compensation	
Wis.[9]	1951	Indemnity Paid $309,147 (1229 Cases) Medical Aid Paid $73,341 (1148 Cases) Total Indemnity and Medical Aid Paid $382,488	Indemnity Paid (Dermatitis) $52,371 (505 Cases) Indemnity Paid (Plants) $5,099 (84 Cases) $57,470 (589 Cases) Medical Aid (Dermatitis) $28,034 (477 Cases) Medical Aid (Plants) $4,001 (80 Cases) $32,035 (557 Cases) Total Indemnity and Medical Aid Paid $89,505 Average Indemnity Both Groups $97.40 Average Medical Both Groups $57.52 Average Indemnity and Medical Costs $154.92	$155 Indemnity and Medical Aid	23% of the Indemnity and Medical Aid

expenses is noted. However, the accompanying tables, constructed from this collected material, do point to the medical and economic importance of the problem of industrial dermatoses.

TABLE III.
INCIDENCE OF COMPENSATED OCCUPATIONAL DISEASES AND OCCUPATIONAL DERMATOSES AS COMPILED FROM LATE ANNUAL REPORTS OF SEVERAL STATES

State	Period	Total Occupational Disease Cases		Total Occupational Dermatoses Cases		% Dermatoses
Ill.[5]	1951	747		474		63%
Ind.[6]	6-30-51 to 7-1-52	191		148		77%
N.J.[7]	1951	Poisonous Substances	251	Poisonous Substances (Plants)	38	71%
		Corrosive Substances	295	Corrosive Substances	295	
		Occupational Diseases	692	Occupational Dermatitis	544	
		Total	1238	Total	877	
Wash.[8]	1951			325		
Wis.[9]	1951	1229		Dermatitis	505	48%
				Plants	84	
				Total	589	

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The Earth and Reason and Life

WHICH IS, the Earth or the creatures that move upon it, the more important? This is a question prompted solely by intellectual arrogance, for in life there is no greater and no less. The thing that *is* has justified its own importance by mere existence, for that is the great and equal achievement. If life were arranged for us from without, such a question of supremacy would assume importance, but life is always from within, and is modified or extended by our own appetities, aspirations, and central activities. From without we get pollen and the refreshment of space and quietude—it is sufficient. We might ask, is the Earth anything more than an extension of our human consciousness, or are we, moving creatures, only projections of the Earth's antennae? But these matters have no value save as a field wherein Thought, like a wise lamb may frolic merrily. And all would be very well if Thought would but continue to frolic, instead of setting up first as locum tenens for Institution and sticking to the job, and afterwards as the counsel and critic of Omnipotence. To the world this system of thought, because it is consecutive, is known as Logic, but Eternity has written it down in the Book of Errors as Mechanism: for life may not be consecutive, but explosive and variable, else it is a shackled and timorous slave. One of the great troubles of life is that Reason has taken charge of the administration of Justice, and by mere identification, it has achieved the crown and sceptre of its master. But the imperceptible usurpation was recorded, and discriminating minds understand the chasm which still divides the pretender Law from the exiled King. In a like manner, and with feigned humility, the Cold Demon advanced to serve Religion, and by guile and violence usurped her throne; but the pure in heart still fly from the spectre Theology to dance in ecstacy before the starry and eternal goddess. Statecraft, also, that tender Shepherd of the Flocks, has been despoiled of its crook and bell, and wanders in unknown desolation, while, beneath the banner of politics, Reason sits howling over an intellectual chaos. Justice is the maintaining of equilibrium. The blood of Cain must cry, not from the lips of the Avenger, but from the aggrieved Earth itself who demands that atonement shall be made for a disturbance of her consciousness. A thwarted consciousness has every right to clamour for assistance, but not for punishment. This latter can only be sought by the timorous and egoistic Intellect, which sees the Earth from which it has emerged and into which it must return again in its own despite. And so, being self-centered and envious and a renegade from life, Reason is more cruelly unjust, and more timorous than any other manifestation of the divinely erratic energy—erratic, because as has been said, "the crooked roads are the roads of genius."

—JAMES STEPHENS

Industrial Hygiene

HOW IT CAN ASSIST THE INDUSTRIAL PHYSICIAN

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THE TERM "Industrial Hygiene" is old in the literature of industrial health but its meaning varies from country to country and even from individual to individual. Only within the past decade has it begun to emerge as a definite, clear-cut professional activity in the over-all program of promoting the health of the worker. Industrial hygiene is that phase of industrial health which is primarily concerned with the recognition, evaluation and control of those factors in the work environment which might adversely influence health. The complexity of modern industry has dictated the need for a new member to be added to the traditional team of the industrial physician and the safety engineer, namely, the industrial hygienist. The philosophy of industrial hygiene, simply stated, is that once an environmental factor can be recognized as having a potentially adverse effect upon health, the actuality of the hazard can be determined by quantitative measurement; if measurement demonstrates the presence of the probable health hazard, environmental controls can be devised that will reduce the hazard to inconsequential proportions for the majority of workers.

Health impairments arising out of occupation many times present unusually difficult problems to the industrial physician. Frequently they are completely non-specific and can best be characterized as an acceleration of the aging process. The worker does not enjoy the feeling of well-being to which he otherwise would be entitled. His production efficiency may be significantly diminished and his actual useful work span may be shortened. Sometimes the impairments progress to the point where they can be definitely recognized as specific disease entities, such as lead poisoning or silicosis. The positive diagnosis of such diseases is difficult, either because of the lack of readily apparent uniqueness, or the obscure cause and effect relationship. A complete knowledge of the patient's work history, including detailed and quantitative information concerning his lifetime of occupational exposures, is of great value to the physician. Knowledge of probable environmental stress on the worker is also of important value to the physician, who must determine healthful job placement for individual employees. It is the purpose of this discussion to describe some of the assistance which is available to him from the industrial hygienist.

EVERY physician is all too familiar with the problem of obtaining accurate information concerning environmental exposures of health import in specific industrial operations. Job descriptions, especially those given by workers, can be exasperatingly vague and misleading. A patient with possible silicosis describes how he dusted a foundry mold with a white powder which was dusty. Was the white powder the active pulmonary fibrotic agent, "silica flour," or the innocuous calcium carbonate? Another worker with possible lead poisoning insists that he works in the container department of a "soda pop" plant where no lead exposure could reasonably be supposed to exist. He does not tell, or does not know, that the dust from a nearby cleaning and repainting operation is high in lead content. Or perhaps the worker thinks that perhaps a solvent he uses is responsible for his ill health. Upon request he brings in a dirty milk bottle one-eighth filled with a clear odoriferous liquid of unrecognizable composition and unknown manufacture. Again, upon request, he brings back the label "Ajexsol" and the supplier's name and address. Correspondence with the indicated manufacturer discloses that, alas, he is but a jobber, but perhaps if one will write to the enclosed address the needed information will be forthcoming. This is done and at long last the word is that the material is the fraction boiling between 110 and 140° C of a reaction by-product mixture of unknown composition but high solvency for many synthetic resins. The industrial hygiene agency can provide the physician with an answer to most of these matters and with a great saving of time and effort.

Perhaps the problem is not one of identity but rather of magnitude. On occasion the worker seeks medical attention because something is wrong with his hearing. He claims that his job is noisy. But noise is a matter of opinion to the individual. How much noise energy reaches the ear? What is the frequency? Some answer to this question, some reliable factual answer,

Presented on the Program of the Fourth Annual Michigan Industrial Health Day, Detroit, March 10, 1953.

must be available to the physician before the influence of the occupational environment on a nerve-type hearing loss can be properly considered. In another case, a girl employed as an x-ray technician is found to have a blood disease. It is necessary promptly to determine to what extent, if any, exposure to excessive amounts of ionizing radiation may be implicated. Or a worker may complain of eyestrain and fatigue because of improper illumination. Definite information concerning the real status of the illumination in the work room would greatly simplify getting at the true cause of the complaint. Data obtained from the comprehensive environmental measurements of the industrial hygienists can be of real assistance to the physicians in similar situations.

Let us consider in more detail just what service an official industrial hygiene agency can provide those who do not have an industrial hygiene service within their organization. I prefer to talk about the official agency because I am a part of one, and because it offers the only such service available to at least half the workers in Michigan. First I would like to tell about the kind of information which is available upon simple telephone inquiry. We have already mentioned the perplexing problem of the composition of "trade name" products. For the past 15 years the official agencies, as a national joint enterprise, have been assembling a trade names index in which the compositions of thousands of materials used in industry are listed. Since some of this material was obtained from confidential sources, the index itself is restricted to official agencies, but specific information is made available to physicians to aid them in protecting the health of their patients. This information is supplemented by many other compilations of formulae not generally or readily available. If no information is at hand, it frequently can be obtained from the manufacturer or by laboratory analysis employing special techniques developed by industrial hygiene chemists.

The industrial hygienist, as part of his professional knowledge, is familiar with the occupational exposures, likely to be of health significance, of nearly every known job classification. Or, if he doesn't know, detailed information otherwise is available to him. The personnel of the official agency is made up of chemists, engineers, physicists, and those trained in the biological and medical sciences. A staff with such a broad range of professional background, widely experienced with the occupational environment and its effect on man, can, on most occasions, be of real assistance. Sometimes it is information concerning processes that is wanted, not only processes in current use in a work place, or those the installation of which are contemplated, but also those which were abandoned as obsolete years ago. Many times information about the geographical occurrence of exposures is wanted. Silicosis is practically unknown among Illinois coal miners, yet it is prevalent in eastern coal mining districts. What are the primary health hazards of salt miners in Michigan? How do Michigan copper mines compare with Michigan iron mines in respect to silica exposure? Every industrial hygiene agency, because of its wide contact with many occupational environments, is a vast storehouse of "experience" information concerning the effect of the environment on man. Likewise most are repositories of comprehensive reprint, journal and reference libraries. A simple telephone call can provide much valuable information with a minimum expenditure of valuable time.

HELPFUL as general information may be, it is no substitute for specific information about the worker's job at the exact location where he does it. Facts are always better than generalizations. Unfortunately there is a widespread failure on the part of industrial physicians to seek specific information about a patient's work environment from an official agency. Whether this is due to unawareness of the service available, reluctance to disclose the identity of the patient or the employer, fear that it might jeopardize the patient's job, antagonize the employer, violate professional ethics, cause involvement in legal action, or some other reason is difficult to determine. The fact remains that most official agencies receive, for all practical purposes, no requests for specific work place inspection service from physicians. Perhaps it is not generally realized that such requests can, if desired, be kept completely confidential; that most official industrial hygiene agencies are service, not policing agencies; that the agency is equally anxious to avoid legal entanglements; that, if so requested, many employers will themselves request the service. In fact, several hundred employers do request service every year. Many requests for specific information do not require an inspection of the work place. The Bureau of Industrial Hygiene of the Detroit Department of Health has in its files more or less comprehensive and current survey and inspection reports on several thousand Detroit work places. These reports not only list the worker exposures, operation by operation, but frequently also contain quantitative measurements of the magnitude of the exposures, sometimes extending back over 15 years. There is a surprising similarity between one of these plant folders and a patient's case history record. It tells the story of the work environment, healthwise, over the years.

The industrial hygienist, in order to form an opinion on the probable effect of a work exposure on health, relies to a considerable extent on measurements. To accomplish these, he has assembled the most complex and ingenious collection of instruments and methods known to laboratory science. Many of these instruments are available nowhere else in the community

because of their specialized application and high costs. The laboratory which serves my group possesses instruments which can indicate directly the quantity of mercury vapor in a sign shop or laboratory, the chlorinated solvent about a degreaser, the carbon tetrachloride in the air of a dry cleaning plant, the carbon monoxide in a garage, the ionizing radiations near x-ray equipment, the intensity and frequency of noise and vibrations, the ultra-violet from a sterilizing lamp, the quantity and quality of illumination, the effectiveness of ventilating systems, and combustible solvent vapors in the air. This is by no means a complete list. Convenient laboratory methods are available for measuring the dust content of the air, the silica content of dusts, air-borne metallic fumes and dusts such as lead, beryllium, antimony, manganese, iron, zinc and cadmium, the composition of complex solvent mixtures, cutting oils and coolants, industrial skin cleaners, and so on. Equipment is available for measuring the efficiency of air cleaning and conditioning systems.

One of the most accurate methods for determining the extent of a worker's exposure to a hazardous chemical is to measure the concentration of that chemical or its metabolite in the blood or urine. Techniques for the measurement of lead, mercury, beryllium, benzene and other chemicals in biological fluids are highly specialized, and such analyses usually can be obtained only from industrial hygiene laboratories. Such service is usually available to the physician for diagnostic purposes without charge; it is not commercially available in the community. Arrangements for such analyses must be made in advance because special sample handling equipment is required.

WE HAVE discussed at considerable length the recognition and evaluation services which are available. But physicians are equally interested in the prevention of ill health arising from work or, more positively, the promotion of good health while at work. This can best be done by the engineering control of the work environment. The most important function of the industrial hygienist is to recommend the appropriate methods, not only for eliminating health hazards, but also for providing the most healthful work place possible. The achievement of this mutual goal is best accomplished by close cooperation.

Industrial hygiene can assist the physicians (1) by providing general information concerning the health hazards of work, (2) by providing specific information concerning the nature and magnitude of an individual worker's exposures, and (3) by providing reliable recommendations for achieving healthful work places.

Just as the City of Detroit and the State of Michigan maintain industrial hygiene laboratories with services available of the type here presented, so in practically all industrial states in the country and in a few cities similar laboratories function with a single objective of bettering the work environment. Almost everywhere some industrial hygiene services are available to all physicians.

"They"

TO A disgruntled few any duly elected group of officers immediately becomes an evil foreign force that is referred to as "they." "*They* re-elect themselves year after year." "*They* run the Society to suit themselves." "*They* fatten their reputations at our expense"; or "*they* give us little service in return for our dues." Nothing that officers or committeemen do is right according to the jerry-built standards of these critics. Any minor deviation is immediately tarred as the nefarious work of *they*. No matter that the man in office is but one of the active members with recognized qualities of leadership who mirrors the thinking and expectations of those who elected him. Or that he seeks and needs help in his job and expects and welcomes constructive criticism. Scant notice is taken that when he speaks to or of the organization he refers to the membership as *we*, not as *you* or *they;* and when a successful job is done it is not *I* who did it, or if unsuccessful, *you;* it is *we* who did both. All of this seems to make little impression. Officers do not expect full agreement among the members on all questions; only a sharing of duty and responsibility is sought, with no one set up as the whipping boy. Added responsibility without special privilege is their lot and they deserve more considerate treatment than that of outcasts called "*they*." Those who would thus separate them from the rest merely emphasize their own indolence and inability to become group participants.

—Editor's Page, in *Detroit Medical News*, October 20, 1952.

Problem Drinking and Industry

CONFERENCE AT THE NEW YORK ACADEMY OF MEDICINE

Reported by
S. CHARLES FRANCO, M.D., Consolidated Edison Company of New York, Inc.

A CONFERENCE on Problem Drinking and Industry was held February 17, 1953, at the New York Academy of Medicine. The purpose was to acquaint the business and industrial community of metropolitan New York with the details and results of programs dealing with the problem drinker. It was sponsored by representatives of local labor groups, a management association, the Medical Departments of the Consolidated Edison Company of New York and the Standard Oil Company of New Jersey, the Yale Center of Alcohol Studies and the Institute of Industrial Medicine, the Consultation Clinic for Alcoholism, and the Department of Neurology and Psychiatry of the NYU-Bellevue Medical Center. The meeting was held to commemorate the first anniversary of the Consultation Clinic for Alcoholism. In February, 1952, the Consolidated Edison Company volunteered to underwrite a large share of the cost of launching the Consultation Clinic for Alcoholism at the University Hospital as a service to local industry. Shortly thereafter the Standard Oil Company of New Jersey joined in the support and use of the Clinic facilities. This Clinic, the first to be devoted solely to the problem drinker in industry, was developed with the guidance of Dr. A. J. Lanza, Director of the Institute of Industrial Medicine, who presided as Chairman of the meeting.

In his introductory remarks, Dr. Lanza commented that the Consultation Clinic for Alcoholism was but a beginning of a definite program to deal with problem drinking in industry, and he noted that this meeting represented one of the first combined endeavors by labor, management, the industrial Medical Department, the medical profession, and the research center to meet the situation.

The Conference Program

"Welcome and Orientation"—DR. A. J. LANZA.
"Management's Viewpoint"—MR. A. A. LOW.
"Labor's Attitude"—MR. W. J. CURLEY, JR.
"Finding the Problem Drinker"—DR. R. C. PAGE.
"Five Years with a Company Program"— DR. S. C. FRANCO.
"Experience of the Consultation Clinic"—DR. A. Z. PFEFFER.
"Industry, the Public and Alcoholism"—S.D. BACON, PH. D.
"Summation"—DR. S. B. WORTIS.

Management's Viewpoint

A. AUGUSTUS LOW (Vice-President Industrial Relations, Consolidated Edison Company of New York, Inc.): Late in 1947, the Consolidated Edison Company officially recognized chronic alcoholism as a medical condition and adopted a Company Procedure on Alcoholism. The aim was threefold: (1) the early recognition of the employee with a drinking problem, (2) the rehabilitation of the employee where possible, and (3), when the rehabilitation is not possible, the establishment of a justifiable basis for disability retirement.

It is no secret that the operating and clerical departments often carry the employee with a drinking problem for many years and use many forms of subterfuge to cover up his deficiencies. Unfortunately he would slowly get worse, use up all "his last chances," so to speak, and finally when he came to the point of decision he would either be fired or covered by a medical diagnosis in order to be placed on the disability roster. Such a policy constitutes a long-term loss to a company when early recognition might have established the possibility of rehabilitation or made possible the determination of an economic loss before a late critical stage. Unchecked in the individual employee, alcoholism often means loss of job, domestic disaster, and sometimes it costs his life.

The majority of problem drinkers in business and industry are in the early and middle stages of their disorder. Aside from their over-indulgence in alcohol they represent, as a rule, a stable group who in our own company have a period of service which averages more than 20 years. We feel that they are worth salvaging. We are now satisfied that in common with other sick people, the problem drinker cannot help himself without outside assistance. Rehabilitation rather than disciplinary measures seems to be a more intelligent approach to the problem.

Under our company procedure an individual employee is considered to be a problem drinker when repeated or long continued over-indulgence interferes with the efficient performance of his work assignment. The employee who disregards the preliminary warnings by his supervisor and persists in his over-indulgence and abnormal behavior is placed on probation. The diagnosis of problem drinking is specifically a Medical Department function. If the Medical Department confirms that the employee has a drinking problem he is offered the opportunity for rehabilitation at the Consultation Clinic. If the offense recurs after steps towards rehabilitation have been taken the employee is suspended by his department and his case is presented for adjudication before a panel consisting of representatives of management, of the Personnel and Medical Departments, and the department which employs the individual. Our experience with the company program for rehabilitation of the problem drinker has indicated that we have been able to salvage a high percentage of employees that we otherwise might have lost, and correspondingly the necessity for disability retirement of such individuals has decreased.

Labor's Attitude

WILLIAM J. CURLEY, JR. (First Vice-President, Utility Workers Union of America, CIO, Local

1-2): Labor's attitude towards problem drinking is probably best expressed by stating that we believe it to be a mixed medical and social disorder. Just as with other medical problems of a social nature, labor should "sit in" with management and the medical profession in arriving at a solution. We are impressed by the fact that in most business and industry, the bulk of problem drinkers are rarely recognized as sick people. The lack of a clearly defined company program coupled with limited means of obtaining proper medical treatment has been a big deterrent in many instances to the early recognition of the drinking problem.

Labor strongly endorses the program of the Consolidated Edison Company under its Procedure on Alcoholism. This program clearly spells out how the problem drinker is identified and what can be done to help him. It not only allows early recognition of the problem before a late critical stage and offers adequate means for rehabilitation, but also provides for disposition of the individual who may not be successful in his rehabilitation attempts. Beyond all these things, it has established the means of preventing the development of the advanced stages of alcoholism. In the past year individuals have reported voluntarily for treatment at the Medical Department of Consolidated Edison before their drinking problems began to interfere with their job performance. All these employees have successfully had their problem under control for the past year. In the long run this may prove the most valuable aspect of the program and it offers a great opportunity for the union stewards to assist the employee with a drinking problem at an early stage.

From labor's point of view, it is important that a company program should not develop into disciplinary measures alone. It is evident that rehabilitation is more successful with the employee whose drinking problem is recognized at an early stage. The results achieved by a successful rehabilitation program and integrated with health education can well provide the basis for the prevention of alcoholism.

Five Years with a Company Program

S. CHARLES FRANCO, M.D. (Associate Medical Director, Consolidated Edison Company of New York, Inc.): Excessive absenteeism, decreased skill, poor production, and heightened accident rates resulting from chronic alcoholism are just as costly as similar losses from other diseases. Even more important, is the fact that if alcoholism is unchecked in the individual it can progress to the total loss to industry of an employee's skill and experience. The alcoholics in business and industry are a relatively stable group until their drinking habits reach a serious stage in the last few years of their disorder. The results of problem drinking are often masked by being attributed to other causes. The unfitness of the problem drinker is consciously or unconsciously often hidden by his fellow employees, his shop steward, his foreman. Even high executives are prone to close their eyes to a problem if they don't know what to do about it. There is reason to believe that the real incidence of problem drinking in industry is probably 2 to 3%.

From a medical point of view it is evident that the majority of problem drinkers in industry have developed through the secondary problems derived from continued excessive drinking. The psychotic, the severely neurotic, and the stereotype "skid row" or psychopathic alcoholics are rarely found working on a regular job.

Our own experience with the company program for the past five years demonstrates that out of 198 cases, 65% have had their drinking problem under control. It is emphasized that some of these individuals have been followed over three to four years. In 1952 there was an improvement in the results of rehabilitation through the efforts of the Consultation Clinic at the University Hospital of the NYU-Bellevue Medical Center. The duration of follow-up is admittedly limited but in that year 80% of the cases had their problem drinking under control without relapse whereas in the previous four years without such a Clinic facility the recovery rate was only 51%. The average sick absence in this group, excluding specific surgical and medical conditions, prior to referral to the Consultation Clinic was 13.5 days per year, approximately double the company average. Since inception of treatment the absence frequency rate has been approximately four days.

Finding the Problem Drinker

ROBERT C. PAGE, M.D. (General Medical Director, Standard Oil Company of New Jersey): The medical approach to problem drinking is limited and the percentage of good results compares poorly with the cost of rehabilitation and the effect on fellow workers. The seriousness of problem drinking is not necessarily related to the extent of its occurrence because a key worker with a drinking problem can seriously affect those under his supervision and can disrupt the proper functioning of a large segment of an organization. Detection of the problem drinker is difficult because the drinker himself hides his illness and his associates, his family and his physician all try to protect him and cover up his deficiencies. Three cases are presented illustrating the progress of problem drinking to an advanced stage and highlighting the errors in handling the problem from the point of view of management, the family, fellow workers, and the physician. All these factors lead to a late detection of the drinking problem. The emphasis should be shifted to prevention.

There are three factors essential to the success of such an undertaking: (1) psychometric testing, (2) an educational program, and (3) the development of teamwork by the Medical Department with management, supervision, and employees. Improved personnel selection techniques by psychometric testing might lead to the early detection of the potential candidates of problem drinking and the proper selective placement of such individuals is not only essential to prevention but is also part of a sound human relations program in industry. The Medical Department is placed in the role of adviser on the management team and will accumulate complete medical data on the individual concerned and assist in an educational program to acquaint all levels of employees with the medical facts on problem drinking.

Experience of the Consultation Clinic

A. Z. PFEFFER, M.D. (Assistant Clinical Professor of Psychiatry, New York University College of Medicine): The Consultation Clinic for Alcoholism at the University Hospital of the NYU-Bellevue Medical Center has been in operation for one year

and during this time 60 problem drinkers referred by four local industrial concerns have been treated. Prior to this the same Clinic was in operation for three years and it provides a basis for comparison of the industrial and non-industrial groups of patients.

The Clinic staff consists of three psychiatrists, an internist, a psychologist, all of whom are part-time, and a full-time secretary.

Ordinarily, alcoholics do not voluntarily seek assistance until drinking has resulted in severe physical, social, personal or family losses. One extraordinary feature of the group of patients that we have seen from industry is that they come to us for the most part in the early stages of alcoholism. This is clearly due to a combination of several important factors, the most important one of which I feel is the Alcoholism Procedure used especially by the Consolidated Edison Company with whom we have had most of our experience. Fifty-one patients have been referred to the Clinic by Consolidated Edison and almost all of them have been placed on probation with the understanding that recurrence of the abnormal drinking behavior may result in loss of job. Ordinarily the threat of the loss of job does not prevent a problem drinker from drinking or motivate a consistent strong desire for help. Another factor is that the average period of employment for this group of patients is 23 years with this one company. This in itself is a striking comparison to the usual alcoholic who has had many job changes, and it reflects on the fact that in the group of patients we are dealing with, whatever other problems they may have, the retention of their job is obviously important to them and the job is not given up easily. Most important in producing a proper atmosphere for treatment at the Consultation Clinic is the fact that the doctor-patient relationship is entirely confidential and no reports are submitted to the referring company.

All patients are seen originally by a well-trained psychiatrist and the goal of the initial interview is to obtain an over-all evaluation of the drinking problem, and it is important to determine this from physical, emotional, social, family and job points of view. The second purpose of these initial interviews is to establish a friendly rapport with the patient, to dissuade him from his conception of the Clinic as an extension of the company, and to elicit larger degrees of positive motivation for treatment. The third goal is to determine what treatment procedure would be best suited for the particular patient. Parallel with these efforts, the patient has laboratory studies, a physical examination and psychometrics. On the basis of these various data the patient is embarked on a treatment program. Our experience has been that it is wisest to get the patient into treatment as quickly as possible and in most instances the entire work-up can be done in one day, with the exception of psychometric tests which are done after the treatment period is started. The treatment procedures consist mainly of individual psychotherapy, group psychotherapy, antabuse (which has been used in three cases only), medical procedures, and in some instances referral to Alcoholics Anonymous. In discussing results: the drinking problem was under control in 41 out of 51 cases, or 80%. For the 41 patients who have done well, the average absenteeism has been four days per year, as compared to 13 days per year for the same group of patients in previous years. The company average for all employees is approximately six days per year. From the point of view of the Clinic, the regularity of attendance by these patients is a striking contrast to our previous experience. However, the period of follow-up at present is insufficient, and it will take at least five years to reach a final determination.

Industry, the Public and Alcoholism

SELDEN D. BACON, PH.D. (Director, The Yale Center of Alcohol Studies): A review of progress in this field discloses rather startling advances in the past 10 to 12 years and is indicated by this meeting of labor, management and the medical profession. A sound educational program is the major need at present, especially to undertake the prevention of problem drinking.

Industry faces a different problem from the public at large. The problem drinker in industry often does not present the typical behavior pattern that we are acquainted with in the picture profile of the usual alcoholic. Instead his problem is disguised, and he is more apt to be a "hidden man" or a "half man" suffering from the secondary alcoholic hangover which interferes with his productive capacity for several days in a week and disturbs his relationship with his fellow workers, supervisors, and the public that he may come in contact with in the course of his business. This accounts for the misconception about the "lack of a problem" concerning alcoholism in industry. While the profile of the "hidden man" is considerably different from the usual alcoholic it should be known to his foreman, supervisors, and shop stewards because of their personal knowledge. An educational program to reach these individuals has to be based on two facts: (1) that top management is vitally interested in the problem, and (2) that a successful rehabilitation program for the recognized problem drinker is already in operation. Only then can successful efforts be expected from an educational program designed to prevent the advanced stages of alcoholism by early detection of the first signs of problem drinking. Case finding by psychometric techniques is limited but it can be done. However a more practical approach is to educate supervision as to the behavior pattern of the "hidden man" in the early phases of his drinking problem. The impact of the "hidden man" on the working members of his family in disturbing their productive work is another factor to be contended with.

Summation

S. BERNARD WORTIS, M.D. (Chairman, Department of Psychiatry and Neurology, New York University, College of Medicine): Alcoholism and problem drinking represent a disorganization of the personality and have a relationship to other drug addictions.

Early recognition of the problem drinker can be successfully accomplished by a company procedure, and is the basis for successful rehabilitation. Increased efficiency, decreased absenteeism, and the salvage of skills which otherwise would have been lost, make a company program a worth-while investment. Also a successful rehabilitation program is the foundation for health education and prevention of this disorder.

Dr. R. C. Page has prodded us into recognition

of the difficulties of finding the case of the problem drinker at an early stage. Psychometric screening tests alone are of little value today because, although they can show some of the personality qualities, they will not tell the direction that they may take. Such testing obviously needs to be integrated with other factors. However continued research in the field of personnel selection techniques is indicated.

Drawing a comparison with research in other fields it might be wise again to look to medical causes being uncovered as the basis for problem drinking and alcoholism.

There is no one cure for alcoholism, and there are many techniques of treatment. The creation of a neutral atmosphere in a clinic facility away from the industrial location is important in establishing a doctor-patient confidence and is essential to successful treatment. Problem drinkers in industry are a relatively stable group, usually with long years of service, and their attachment to the job gives them a special motivation. A period of probation under a company procedure on alcoholism also strongly affects the motivation. Education on the problems of alcoholism is a major need, and the concept of the "hidden man" needs to be translated to lay consumption.

Labor and management are far ahead of government in dealing with problem drinking. A practical and efficient industry has to be forward looking, and in dealing effectively with problem drinking a pattern is being developed toward an approach to other psychosomatic problems in the field of human relations.

Bad Teeth

ARE bad teeth biting into profits? Most emphatically .... according to figures gathered by U.S. Public Health Service, showing that more than $12 million of production is wasted annually through man-days lost from dental ailments. Separate absenteeism studies also bring out proportion resulting from toothaches and related complications. At five war-production plants studied in 1945, dental reasons accounted for annual frequency rate of 47.3 absentees per 1000. A 1943 study of 1200 civilian employees at N. Y. Naval Shipyard showed that 23 absences were due to dental reasons alone. However, significant point about dental illness is not proportion of man-days lost, but how many man-days can be saved with minimal treatment. With inauguration of dental clinic at N.Y. Naval Shipyards, average treatment time for all referrals was 10 minutes, resulting in average saving of 5.3 hours per man per year on job. Only 12% of referrals could not be treated by clinical facilities. Another advantage of industrial dental clinic is that tooth ailments often develop into other types of illness; early discovery of certain conditions by dentist prevents need for much costlier medical treatment later on. To further knowledge of occupational uses of dental care—with special attention to relationship between dental and other types of illness—a Workshop in dental research has just been launched in New York City under direction of Alfred J. Asgis, Assistant Professor of Oral Surgery at New York University. In interview, Dr. Asgis gave as one of Workshop's main objectives a study of how dentistry relates to "the over-all problem of health service programs in industry, the questions of industrial hazards and their control, absenteeism, accident prevention and related issues .... the dental aspects of workmen's compensation." An adequate dental program for industry, according to Dr. Asgis, includes these services: pre-employment and periodic examinations including roentgenograms, emergency care for the relief of pain, consultations, prophylaxis, referral to private practitioners for needed dental treatment, observation and elimination of industrial hazards, keeping of adequate records, and dental health education.

—*Personnel Executives Newsletter*, 3:5 (March 16) 1953.

President's Page

THE PRESIDENT of the Industrial Medical Association, upon retirement from this office, pauses to review the events of the past year in an attempt to evaluate the accomplishments. One year ago six objectives were set forth as a goal. In reviewing these objectives there is satisfaction in knowing there has been definite progress in each instance. Perhaps we should have gained more new members, but I am sure the full impact of our drive for membership has not been realized. I sincerely hope that all of us will strive for greater participation in our Association by all physicians practicing industrial medicine.

During the past year our Association has grown, not only in membership but also in status, from the standpoint of recognition as the authoritative body in the field of industrial medicine. Such recognition is not easily achieved or maintained. This accomplishment was not the result of the effort of a few but it is a reflection of the endeavor of the majority of our members. It frequently is more difficult to maintain a position than it was to gain that position. Therefore, we must all take a more active interest in our Association now in order that, during this vital period of development, we do not fail to provide the necessary impetus. It is not enough simply to become interested, we must become active in our Association. Many times we hear physicians ask how they can take an active part in the Association. The best answer to this is, "Take an active part in the component group, and when willingness to work has been demonstrated, the Industrial Medical Association will be pleased to utilize all efforts." There is now, and always will be, more work to be done than there are workers. Many physicians believe they have fulfilled their obligations to the profession, when they have rendered treatment to the patient. Their service should go beyond this. We all have an obligation to the profession, our hospital staff, our county medical society, and our specialized organization—which in our case is the Industrial Medical Association. Activity in these groups not only strengthens the group, but it is a mutual and complementary function. The stronger we build our Association, and our specialty, the stronger it makes our individual positions. There is no limit to the success which we, as a group, might attain if we get the enthusiastic support of *all* men in our field. We have gained much; we could gain more with greater support from a wider distribution of members. During the past year we have attempted to solicit the help of all.

We have had excellent assistance from our Counselors. Few appreciate the duties and responsibilities of these men. It is an assignment which constitutes an endless amount of work with little glory. These men are actually the "backbone" of the Association, and with their strength will grow the strength of the Association. These men cannot work with the greatest effectiveness unless they have the utmost cooperation and active participation by all of the members in their district. Each member should make it his duty to offer assistance to his Counselor. The future growth and strength of our Association will depend upon YOU.

The committees of the IMA have been extremely active during the past year, and in most instances great contributions have been made to the field of industrial medicine. The effect of good committee work is not always realized immediately, but it is cumulative in its effect. To these committees the entire membership of the Association should be grateful.

The Board of Directors has met three times during the year. These men have served the Association well and have been a real guiding force to the Association. Issues were not always met with unanimity, but open discussion usually produced the most effective results.

During the past year the IMA had a very cooperative Executive Committee. This committee relieves the President of excessive work and shares the responsibilities. The demands on the committee during the past year were great, and an unusual amount of time was devoted to the business of the Association, and to the American Foundation of Occupational Health. The average member of the Association is not always aware of the great number of hours of diligent work these men devote to the Association.

I wish to take this opportunity to express my sincere appreciation to the Counselors, the committee members, the directors, the officers and all of the members, for a year during which I had the finest cooperation from all. It has been a pleasant and interesting period which I am sure I shall never forget. You and I—all of us—must continuously work for greater achievements in our chosen field, and also put forth our best effort to bring progress to the Industrial Medical Association.

E. A. Irvin, M.D.

President,
INDUSTRIAL MEDICAL ASSOCIATION

Association News

IMA Lapel Button

INQUIRIES have been received regarding the purchase of a Lapel Button indicating membership in IMA. A drawing of a two-colored button on a gold background has been prepared and will be on display at the Association desk at the Los Angeles meeting. A picture of the drawing is shown in the Association masthead on the reverse side of the contents page of this Journal. It is suggested that those interested in obtaining an Association Lapel Button write to the IMA office, 28 East Jackson Boulevard, Chicago 4. If there are enough requests to warrant the initial outlay for dies and manufacture of a small number to be stocked, they can then be offered for sale.

Michigan Industrial Health Day

THE Fourth Annual Michigan Industrial Health Day this year was March 10, at Detroit. The organizations represented were Michigan Association of Industrial Physicians and Surgeons; Michigan State Medical Society Committee of Industrial Health; University of Michigan; Wayne University; Michigan Industrial Hygiene Society; Detroit Academy for Surgery of Trauma; Michigan State Department of Health. The program follows:

"How Industrial Hygiene Can Assist the Industrial Physician"—W. G. FREDRICK, Sc.D.

"Burn Shock. Its Pathological Physiology and Treatment"—COL. WM. H. AMSPACKER, M.D.

"The Cardiac Patient in Industry"—J. G. BIELAWSKI, M.D.

"Applied Physical Medicine"—C. R. DEAN, M.D.

"Recent Advances in Surgery of Trauma"—J. M. DZIOB, M.D.

"Hernia Repair"—L. T. PALUMBO, M.D.

"Cerebral Vascular Accidents in Industry"—ROBERT C. BASSETT, M.D.

The Los Angeles Meeting

Hospital Clinics—Tuesday, April 21

AMONG the features of the INDUSTRIAL HEALTH CONFERENCE at Los Angeles, April 18-25, 1953, will be the Medical and Surgical Clinics at Los Angeles County General Hospital from 9:00 A.M. to NOON, on Tuesday, April 21. With STANLEY S. HAFT, M.D., Los Angeles, as Coordinator, the subjects and speakers will include "Rehabilitation by Plastic Surgery—Presentation of Cases Before and After"—HAROLD I. HARRIS, M.D., Los Angeles; "The Early Clinical Appraisal of Burns"—WILLIAM S. KISKADDEN, M.D., Los Angeles; "Trauma of the Abdomen"—HENRY R. THOMAS, M.D., Los Angeles; "The Problem of Fluid Balance in Medicine and Surgery"—RALPH E. HOMANN, M.D., Los Angeles; "Intramedullary Fixation of Fractures: Movie Film on the Intramedullary Fixation of Fractured Femur with Complete End Result"—STANLEY S. HAFT, M.D., Los Angeles. Members are to arrange own transportation in groups.

Problem Drinking

INTERPOLATED on Tuesday, April 21, will be a special Meeting on "Problem Drinking in Industry," at the Los Angeles Statler at 8:00 P.M., in the Los Angeles Room, under the joint sponsorship of the Committee on Problem Drinking of the Industrial Medical Association and the Western Industrial Medical Association. The speaker will be GEORGE N. THOMPSON, JR., M.D., Associate Clinical Professor Neurology and Psychiatry, University of Southern California School of Medicine; he will discuss the "Therapeutic Management of the Alcoholic Employee."

Plant Tours—Friday, April 24

THE PLANT Tours Committee has arranged industrial tours for Friday morning and Friday afternoon, April 24. Buses will leave the Statler Hotel at 8:00 A.M. and 12:15 P.M. to cover approximately two hours at North American Aviation plant, and an hour and a quarter at Hughes Aircraft, with sightseeing enroute. The trip to North American Aviation will cover industry from light to heavy; the visitor will see a sheet of metal start from the beginning, pass through all phases, and end out on the line as a Sabre Jet. There will be the opportunity to see various phases of hazardous occupations, with their safety devices, the spray painting booth, plating, foundry, etc., as well as the machine shop, carpenter shop, drop hammer, the stretching of sheets of metal, the altitude chamber, the wind tunnel, and the noise abatement of the jet engine after burners. At the Hughes Aircraft plant the visitor will see the various departments, including the helicopter, while on the way to the area where paraplegics have been rehabilitated and are doing a wonderful job in the aircraft business. OWING TO SECURITY REGULATIONS, ONLY UNITED STATES CITIZENS CAN VISIT THESE PLANTS. Those interested should visit the Tour Registration Desk at the Statler as soon as possible after arrival. Also inquire at the Tour Registration Desk about special entertainment tours.

The Banquet

COCOANUT Grove at the Los Angeles Ambassador Hotel will be the scene of the Industrial Medical Association banquet at 8:30 P.M. on Wednesday, April 22. There will be accommodations for about 800 people. Arrangements have been made for a "name" band and top entertainment, with the celebrated singer, Yma Sumac, as featured star. This will include the usual Cocoanut Grove entertainment throughout the evening, with dancing and floor show. The Hotel has reserved the cocktail lounges adjacent to the Cocoanut Grove from 7:30 to 8:30 P.M. for banquet guests, and it is hoped that many will gather for a social hour preceding the banquet. Officers of the Association and distinguished speaker guests will have a separate cocktail hour in a private room and promptly at 8:30, will be seated at the speakers' table. The tickets are $10.00 per person; until April 11 they may be purchased by mail through DR. BEN FREES, Chairman of the Banquet Committee. His address is 629 South Westlake Avenue, Los Angeles 5.

The Exhibitors and Their Exhibits

THE EXHIBITORS and the general character of their displays are indicated in the following list. Here once more is the newest and most up-to-date in "Product Research and Development," of interest to everyone in the industrial medical field and all its related activities:

Abbott Laboratories—"Exhibiting Covicone

Cream, a new protective skin cream against contact dermatoses and allied conditions"....Booth 9.

American Cancer Society—"Exhibiting the life-saving educational program offered to business and industrial firms"....Booth C1.

American Optical Company—"Industrial Safety and Visual Efficiency"....Booth 39.

American Tobacco Company—"Exhibiting a smoking machine designed to facilitate investigations of the properties of tobacco smoke"....Booths 44 & 83.

Armour Laboratories—"Products of The Armour Laboratories line of interest to industrial medicine" ....Booth 74-75.

Arnar-Stone Labs, Inc.—"New developments in regard to the Americaine products"....Booth 29.

A. S. Aloe Company—"Physicians, Hospital and Laboratory Equipment and Supplies"..Booth 16-17.

Ayerst, McKenna & Harrison—"Exhibiting the Ayerst line of prescription specialties"....Booth 77.

Becton, Dickinson & Co.—"Exhibiting Ace and Asepto Bandages, Vacutainers for Blood Sampling, General line of Hypodermic Needles, Syringes and Diagnostic Items"....Booths 27 & 38.

V. Ray Bennett Company—"Displaying and demonstrating various pieces of respiratory equipment"....Booth C2.

Beverly Hills Surgical Supply Co.—"Industrial Medical Equipment and Supplies"....Booth 3.

John H. Breck, Inc.—"Breck Industrial Preparations; Breck Hair and Scalp Preparations".... Booth 28.

Bristol-Myers Company—"Bufferin; Ammens Powder; Sal Hepatica; Trushay, and Minit Rub" ....Booth 32-33.

Leslie R. Burt—"Exhibiting Molecular Filter Equipment and accessories"....Booth 84.

Camel Cigarettes—"Marking your initials on an attractive plastic cigarette case filled with a package of CAMELS"....Booth 7-8.

Carbisulphoil Company—"Exhibiting Foille, Activol, and Tarcaine"....Booth 49.

Chattanooga Pharmacal Company—"Exhibiting Hydrocollator Steam Packs and Master Units".... Booth 46.

Ciba Pharmaceutical Products, Inc.—"Exhibiting Apresoline, Regitine, Antrenyl, Elkosin and Pyribenzamine"....Booth 30.

Coca-Cola Company—"Ice-cold Coca-Cola served through the cooperation and courtesy of the Coca-Cola Bottling Company of Los Angeles and the Coca-Cola Company"....Booth 64.

Coles Corporation—"Exhibiting surgical equipment of advance design"....Booth 53.

Consumer Standard—"Exhibiting Consumer Standard Group Vitamin Plan"....Booth 86.

Continental Medical Bureau—"Medical Placement Bureau"....Booth 51.

Davis Emergency Equipment Company, Inc.—"Exhibiting Industrial Safety Equipment Products and Toxic Gas Analyzers"....Booth 4.

Davis and Geck, Inc.—"Featuring several new surgical specialties in addition to their comprehensive line of sutures"....Booth 73.

Davis-Smith Agency—"Complete Employment Service"....Booth 57.

Denver Chemical Manufacturing Company, Inc. —"Demonstrating the Denco Reagents and the new Albumin Test Denco"....Booth 15.

Desitin Chemical Company—"Desitin Products" ....Booth 71.

DoHo Chemical Corporation—"Featuring Auralgan, New Otosmosan, Rhinalgan, Rectalgan".... Booth 26.

Duke Laboratories, Inc.—"Elastoplast-bandages, Unit Dressings and Coverlets; Tecto; Nivea Creme-Skin Oil, and Basis Soap"....Booth 69.

Encyclopaedia Britannica, Inc.—"Featuring Encyclopaedia Britannica Publications"....Booth 41.

Eaton Laboratories, Inc.—"Products of Special Interest to Industrial Physicians"....Booth 66.

Herman Hosmer Scott, Inc.—"Exhibiting the latest in Noise Measuring Instruments"....Booth 56.

Hillman Pharmaceutical Company—"Hillman's D Compound"....Booth C6.

Hygiene Research, Inc.—"Featuring Verex Protective Cream; Clerex Solvent Protection"..Booth 21.

Ille Electric Corporation—"Physical Therapy Equipment"....Booth 47.

International Cellucotton Products Company— "Printed Educational Materials on Health; Information for Girls and Young Women"....Booth 82.

Johnson & Johnson—"Surgical Dressings".... Booth 20.

Keystone View Company—"Keystone Occupational Visual Service"....Booth 11.

Walter G. Legge Company, Inc.—"Exhibiting their Conducote Conductive Floor Coating for use in hospital operating rooms or where static problems exist"....Booth 35.

Liberty Mutual Insurance Company—"Featuring Liberty Mutual Rehabilitation Program"..Booth C8.

Liebel-Flarsheim Company—"Diathermy and Bovie Electrosurgical Apparatus"....Booth 48.

Eli Lilly and Company—"Pharmaceuticals and Biologicals"....Booth 76.

P. Lorillard Company—"Featuring Old Gold, Embassy and Kent Cigarettes"....Booth 65.

Mathew Bender and Company—"Exhibiting Grays Attorneys text book of Medicine and Larsons Workmens Compensation"....Booth C3.

B. F. McDonald Company—"Personal Industrial Safety Equipment"....Booth 88.

Meditron Company—"Exhibiting modern instruments for Electrodiagnosis and Electrotherapy".... Booth 89.

Duncan C. McLintock Company—"Featuring Surgical Dressings and Bandages used extensively in Industrial First Aid"....Booth 67.

Maico Company, Inc.—"Hearing Testing Equipment"....Booth 72.

Medical Fabrics Company, Inc.—"Featuring Non-Adhesive and Adhesive Elastic Bandages, Elastic First Aid Dressings and Medicated Bandages".... Booth S1.

Medco Products Company—"Medcolator-Muscle Stimulator—Council accepted"....Booth 19.

Medical Supply Company—"Unit-type First Aid Material and Kits—Burn Spray First Aid Kits".... Booth 43.

Metropolitan Life Insurance Company—"Display of industrial medical and safety services available to industry by Metropolitan Life Insurance Company"....Booth 61.

Micro X-Ray Recorder, Inc.—"Featuring Micro X-Ray Recorder and Accessories"....Booth 87.

Milburn Company—"Skin Protective Creams, Chemical, and Heat-Resisting Clothing"..Booth 2.

Miles Laboratories, Inc.—"Bactine-Alka Seltzer —One-A-Day Vitamins"....Booth 42.

Mine Safety Appliances Company—"Instruments;

Artificial Respiration Equipment; First Aid Materials"....Booths 81 & 36.

Parke, Davis & Company—"Pharmaceuticals and Biologicals Products"....Booth 78.

Paschall Laboratories, Inc.—"Exhibiting Episcorb Inhalant and the Episcorb Micromist Nebulizer"....Booth 52.

Pepsi Cola Company—"Serving ice-cold Pepsi Cola"....Booth 58-59-60.

Protecto Products Company—"Protecto Paper Toilet Seat Covers and Dispensers"....Booth 54.

Ries Corporation—"Moistaire; Heat Therapy Equipment"....Booth 45.

J. B. Roerig and Company—"Ethical Pharmaceuticals"....Booth 5.

Sacro-Matic, Inc.—"Featuring the Sacro-Matic Table"——Booth 55.

Sanborn Company—"Electrocardiographic and Metabolism Equipment"....Booth 14.

Schenley Laboratories, Inc.—"Featuring Titralac, Sedamyl, Euphased, Dorbane, and Crephex"....Booth 22.

R. L. Scherer Company—"Everything for the Doctor and Hospital"....Booth 50.

Schering Corporation—"Featuring new therapeutic developments"....Booth 31.

Scholl Manufacturing Company—"Surgical Adhesives and Dressings"....Booth 63.

Scott Aviation Corporation—"Featuring the Scott Demand Inhalator"....Booth 24.

Sharp & Dohme, Inc.—"Pharmaceuticals and Biologicals"....Booth 12.

Smith, Kline & French Laboratories—"Featuring 'Quotane,' new highly effective topical anesthetic"....Booth 10.

Spindler & Sauppe—"Exhibiting Selectroslide Automatic Projector for 2 x 2 slides with Synchronized Sound"....Booth 34.

E. R. Squibb & Sons—"Pharmaceuticals"....Booth 23.

Stephenson Corporation—"Respiration and Scientific Equipment"....Booth 1.

Swift Laboratories, Inc.—"First Aid, Surgical Supplies; Safety Equipment; Vitamins"..Booth C7.

Tarbonis Company—"Tarbonis and Histar Ointments"....Booth 62.

Travenol Laboratories, Inc.—"Featuring Piromen"....Booth 25.

United States Safety Service Company—"The very latest development in salt tablets"....Booth 70.

United States Tobacco Company—"Featuring Sano Tobacco Products"....Booth 90.

Vestal, Inc.—"Top-Quality Antiseptic Products"....Booth 68.

Vitamins for Industry—"Vitamin products and educational material for use of vitamins and health safety programs"....Booth 18.

Westwood Pharmaceuticals—"Featuring LOWILA CAKE"....Booth 79.

Whitehall Pharmacal Company—"Anacin; Bi-SoDol; Sperti Bio-Dyne Ointment"....Booth 13.

Willson Products, Inc.—"Respirators and Scientific Equipment"....Booth 6.

Winthrop-Stearns, Inc.—"Featuring PHISOHEX and ZEPHIRAN CHLORIDE"....Booth 80.

Woodward Medical Personnel Bureau—"Medical Placement Bureau"....Booth C4.

Wyeth, Inc.—"Pharmaceuticals"....Booth 85.

Zimmer Manufacturing Company—"Orthopedic Equipment"....Booth 37.

Science Miniature

Enzymes in Occupational Diseases

AT THE recent national industrial medicine conference conducted at Saint-Vincent as reported in *J.A.M.A.* (151:661, 1953) by its Italian correspondent, extended consideration was directed to enzyme systems in occupational diseases.

"Professor Graziani divided the enzymes into three groups: the hydrolases, the desmolases, and the enzymes that catalyze the transportation of atoms or groups of atoms to the interior of the molecules of the substrate. The most interesting group is that of the desmolases, which catalyze cellular oxidation-reduction reactions. The study of enzymatic diseases is interesting because of the sensitivity of the enzyme systems to extremely small variations of the pH and temperature.

"Professor Graziani reviewed the physiopathology of some poisons from the enzymatic standpoint. The action of lead causes diminution of codehydrogenases and produces a disturbance of oxidation-reduction that has repercussions mainly on the hemoglobin synthesis. Benzene produces an increase in disulfide linkages with a decrease in substances containing sulfhydryl radicles. Hydrocyanic acid and cyanides are poisons of the Warburg's respiratory enzyme. Carbon monoxide blocks the respiratory function of blood pigment with formation of carboxyhemoglobin; in larger doses it also affects Warburg's heme, whereas the yellow enzymes help to compensate for the poisoning.

"In the second part of the report, clinical and therapeutic applications were discussed. Professor Sessa explained some of the most important occupational poisonings and began with the biochemical lesions that are caused through the inhibition of the enzymatic systems. The symptoms attributable to such inhibition in lead poisoning are mainly anemia, coproporphyrinuria, and hepatitis. In benzene poisoning there is depression of hematopoiesis, whereas fatty degeneration is the expression of the complex enzymatic alterations caused by phosphorus, carbon tetrachloride, or arsenic. In therapy the mechanism of enzymatic anti-inhibition can be called on for many medications. In fact, cysteine and reduced glutathione are great activators of proteinases; proteins activate lipases; and salts of magnesium activate phosphatases and phosphorylases.

"Therapy is also carried out for vitamin deficiencies that occur during poisoning such as of vitamin C in benzene poisoning, vitamin PP in lead poisoning, and B complex vitamins in benzene poisoning."

Product Research and Development

Articles in this section of the Journal are related to commercial or prospectively commercial products and, by requirement, are written by physicians, represent original work not previously published, and have some flavor of newness. These articles are published so that newer products may become recipients of further consideration and appraisal in the industrial medical field. The claims and conclusions of authors do not necessarily reflect the attitude or opinions of this Journal, or of any associated organization.

New Treatment for Premenstrual Tension and Dysmenorrhea

MILTON VAINDER, M.D.
Chicago

SINCE the description of premenstrual tension in 1931 by Frank,[1] the condition has become generally recognized as a clinical entity, and numerous studies have been conducted on the subject. Diagnostically, it presents no difficulties, since the clinical picture is quite constant, varying only in degree. Less clearly understood, however, are other phases of the problem: its etiology, pathology and treatment.

Terminology of the condition has become rather well established. Molimen (and the plural, molimina) have been suggested, but the original term, premenstrual tension, has received general recognition because it is descriptive. The symptoms develop premenstrually, and tension is present both physically and mentally.

The premenstrual tension syndrome includes mental depression, headache, breast tenderness, abdominal bloating, thigh pain, edema, lassitude, and irritability. Onset of the symptoms is in the premenstrual period, usually four or five days premenstrually, but occasionally somewhat earlier. The peak is usually reached shortly before menstruation,[2] and may continue through part or all of the period. It is frequently related to dysmenorrhea.[3]

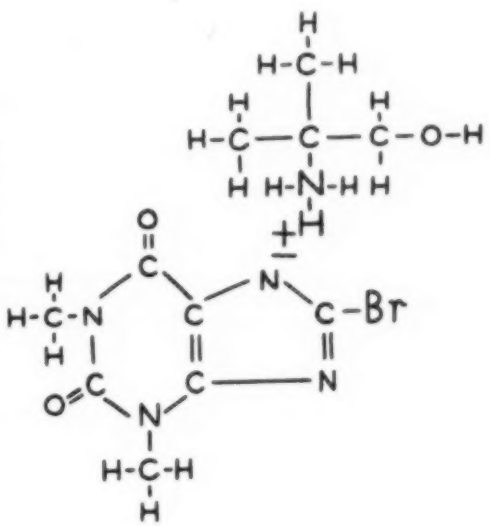
Various theories as to etiology have been advanced, such as allergy,[4] psychiatric disturbance,[3] and abnormal sodium retention.[1,5] A hormonal imbalance is more generally regarded as being indirectly concerned with the syndrome, and the symptoms themselves are undoubtedly related to excess extracellular fluid accumulation. Cessation of the symptoms concurrent with spontaneous diuresis at the onset of the menses has been reported by Thomas.[6] Attempts to accomplish similar diuresis by means of ammonium chloride or mercurials have, however, proved disappointing, indicating that the fluid retention is caused by some factor other than hypernatremia. The most likely explanation thus far has been a cyclic increase in the pituitary anti-diuretic hormone (ADH).

Treatment Measures

IN A previous paper[7] we reported on a study of 153 patients treated with a preparation* combining an anti-pitressin substance with an analgesic agent. Results were satisfactory in this series. However, since the anti-pitressin compound was an antihistaminic derivative, it occasionally produced side effects such as drowsiness and giddiness. These symptoms were never serious, but it was deemed desirable to search for an agent which would produce the same therapeutic effect without the side reactions common to the antihistamines. A new compound has now come to our attention. It was decided to employ this new agent in a series of cases to determine its effectiveness as well as its freedom from side effects.

Chemistry

THE preparation used in the present study is in tablet form,** containing 2-amino-2-methyl-1-propanol-8-bromotheophyllinate, together with 100 mg. of acetophenetidin. The chemical structure of acetophenetidin, or phenacetin, is well understood, and will not be discussed here. The other compound has the following structural formula:



*M Minus 4.
**M Minus 5, supplied by Whittier Laboratories, Chicago.

Unlike its predecessor, the compound is not an antihistaminic derivative. It is, however, similar in its diuretic component, in that it is an 8-bromotheophyllinate.

Pharmacology

IN ANIMALS, the drug counteracts the water retention induced by the injection of pitressin, and it also is capable of neutralizing the action of the endogenous antidiuretic hormone. Its action in both respects is somewhat greater than that of its predecessor. In addition to its diuretic effect, it increases the elimination of sodium and potassium, largely as chlorides. In the human, the same action against endogenous ADH factor has been demonstrated.

Rationale

SINCE the premenstrual tension syndrome is related to water retention, and there is considerable evidence to indicate that the water retention is due to excess production of ADH prior to the menses, the use of an agent to reverse the action of the antidiuretic hormone should prove beneficial. With the reduction in extracellular fluid there should be a decrease in the tension symptoms and swelling. Addition of a reliable analgesic agent has a beneficial effect on the painful symptoms, particularly when the patient is subject to dysmenorrhea.

Clinical Study

THE medication was used in 42 cases displaying all or most of the symptoms of premenstrual tension. The patients were all carefully chosen women of childbearing age. Each was given a careful gynecologic examination to rule out pelvic pathologic conditions. Basal metabolism determinations, chest x-rays, electrocardiograms, blood counts and urinalyses were done on all. These findings were generally within normal limits.

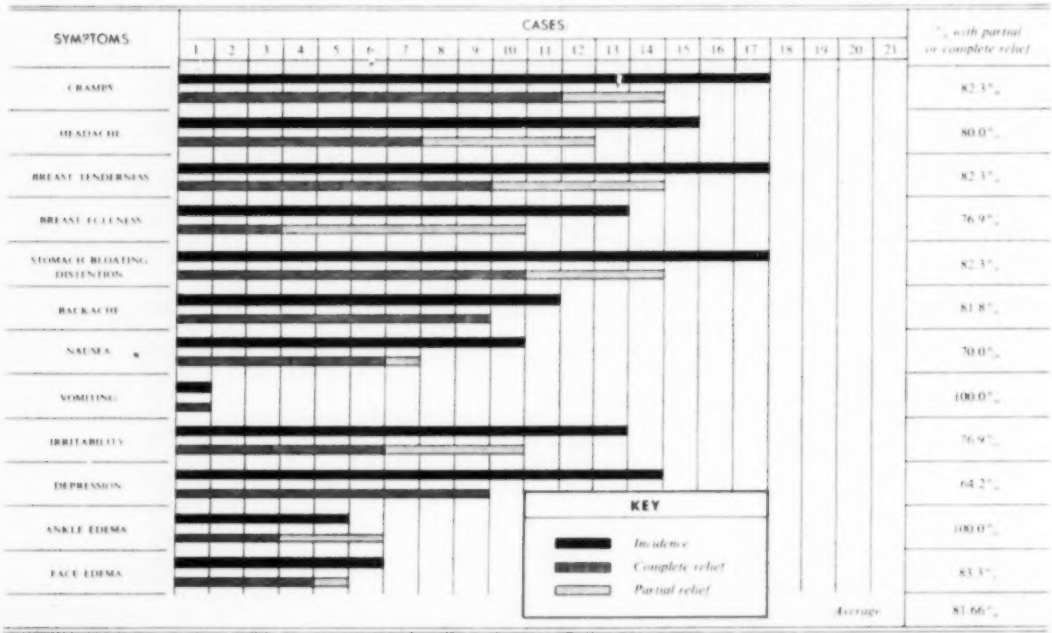
Each patient was given two identical charts, with the symptoms listed and spaces reserved for insertion of the dates and the occurrence of the symptoms. One chart was used as a control, for use prior to and during a period when no medication was given. The other was to be used in the succeeding month, when medication was to be administered. During the treatment period, the patients were instructed to take one tablet three times a day beginning four days before the expected onset of menstruation and continuing throughout the usual period of symptoms. After the two months, the charts were turned in and formed the basis of this report.

Results

THE composite table indicates the number of patients presenting each symptom in the control period and the number completely or partially relieved with the medication. The over-all average of symptom relief, both partial and complete, was 81.66%.

As will be noted, relief was more often complete than partial, except in the case of breast fullness. This may be explained on the basis that not all of the breast fullness encountered in conjunction with menstruation is caused by fluid retention, but some is due to glandular activity.

INCIDENCE OF SYMPTOMS AND EFFECTIVENESS OF M-MINUS-5



There was at least some relief in all but two cases. In one of these, there was exaggeration of symptoms during the treatment period; in the other, some of the symptoms were exaggerated and others were relieved.

The symptoms relieved in this series were those of both premenstrual tension and dysmenorrhea. No attempt was made to distinguish between the two groups of complaints, inasmuch as considerable overlapping exists.

There was no evidence of toxicity or side effects in this series.

Summary

IN A series of 42 cases of premenstrual tension, with or without associated dysmenorrhea, all but two obtained some relief of symptoms from the use of 2-amino-2-methyl-1-propanol-8-bromotheophyllinate, together with 100 mg. of acetophenetidin.

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References

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Benjamin Franklin, Hygienist

BENJAMIN FRANKLIN was one of the earliest hygienists. He discussed exercise as a means of preserving health and sought the best kinds to use. He explored, too, the influences of swimming, cold baths, and fresh air on health. The modern treatment of tuberculosis is based in part on the open-air mode of life which he long had advocated. "Colds" were a favorite topic, and Franklin's writings on the subject are his nearest approach to medical articles. He believed a person caught cold if he were in a close, unventilated room with other people who already were affected. He thought damp clothes might cause colds, but that clothes wet with sea water would not, because "no clothes could be wet as water itself, and one did not catch cold while bathing and swimming." Franklin gathered notes for an article on colds which, if the questions he posed were an indication, would have been the most comprehensive of its day. Unfortunately, he did not live to write it. In many letters to his friends, he discussed diet and its effect on health and disease. For example: "In general, mankind, since the improvement of cooking, eat about twice as much as nature requires. Suppers are not bad, if we have not dined, but restless nights naturally follow hearty suppers after full dinners. Indeed, as there is a difference in constitution, some rest well after these meals; it costs them only a frightful dream and a apoplexy after which they sleep till doomsday. Nothing is more common in the newspapers than instances of people, who after eating a hearty supper are found dead abed in the morning." Franklin liked to tell the story about the dinner party he attended at which a fat, jolly man complained of a fever for which the doctors had done nothing over a three-year period. "On which I asked him," Franklin wrote, "if it were not now time to inquire whether he had any fever at all. He is indeed the only instance I ever knew of a man's growing fat upon a fever." Franklin wrote also on the heat of the blood and the causes for it. His library, one of the best in the Colonies, had a glass machine that demonstrated the motion of the blood through the arteries, veins, and capillaries. Other subjects that stimulated his interest were absorbent vessels, perspiratory ducts of skin, sleep, deafness, nyctalopia, cancer, and yellow fever. Franklin's letters on lead poisoning are classics in medical literature. One, to his friend Dr. Cadwallader Evans, said: ".... you mention the lead in the worms of stills as a probable cause of the dry belly-ache among punch-drinkers in our West Indies .... general mischief is done by the use of leaden worms, when rum distilling was first practiced in New England, which occasioned a severe law there against them .... I have long been of the opinion, that the distemper proceeds always from a metallic cause only; observing that it affects, among tradesmen, those that use lead, however different their trades—as glaziers, letter-founders, plumbers, painters .... and, although the worms of stills ought to be of pure tin, they are often made of pewter, which has a great mixture in it of lead ...."

—From "Benjamin Franklin's Contributions to Pharmacy and Medicine," by WALTER FRANKEL, M.D., in *The Merck Report*, October, 1962.

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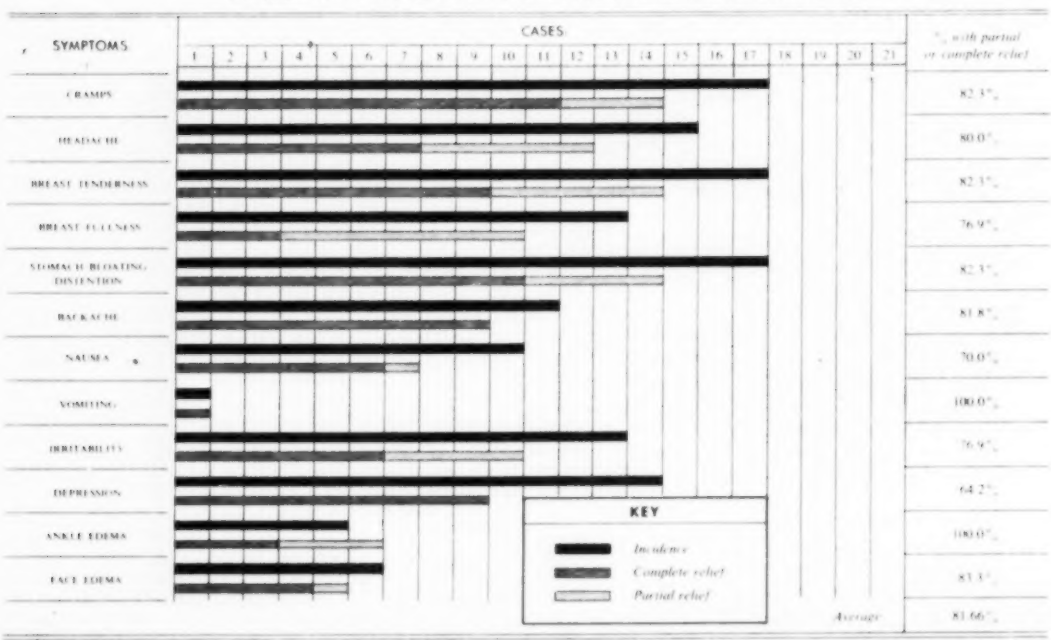

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Letters

Toxicity of Gasoline

TO THE EDITOR: I have noted with considerable interest the article in the October, 1952, issue of *Industrial Medicine and Surgery* entitled "Research on Chronic Toxic Effects from Long Exposure to Vapors of Pure Gasoline," by Drs. A. Amorati, C. Cacciari, and F. M. Troisi.

I should like to point out the dangers in trying to use information presented in this article for judging the toxicity of gasoline. Two particular points are made. They are as follows:

1. It is specified in this paper that the material involved in the study "refers to pure gasoline which always has been employed in the working process, as required in technical needs, composed exclusively of hydrocarbons of paraffin series distilling from 80°C to 130°C, in particular making use of distillates between 80°C and 100°C in the cold season and distillates between 100°C and 130°C in the warm season. This type of gasoline is completely free from any other compound or substance...."

The "pure gasoline" to which the authors refer is undoubtedly considerably different from the product that we know as gasoline and which is used as a motor car fuel. For example, the Bureau of Mines conducted a motor gasoline survey during the winter of 1951-52 obtaining data on a number of motor gasolines on the market at that time. The following table lists their findings.

SUMMARY OF VALUES
NATIONAL MOTOR GASOLINE SURVEY
WINTER 1951-1952
U. S. BUREAU OF MINES

	Regular Priced			Premium Priced		
Property	Min.	Ave.	Max.	Min.	Ave.	Max.
Gravity (API)	55.6	62.6	71.7	55.5	62.4	73.1
Sulfur, Wt. %	0.011	0.092	0.562	0.015	0.080	0.463
Gum (Mg/100 ml)	0.0	1.8	7.0	0.0	2.1	10.0
Tetraethyl Lead (Mg/gal)	0.06	1.45	2.98	0.0	1.84	3.26
Initial Boiling Point—°F	78	91	112	80	91	108
End Boiling Point—°F	324	402	444	327	399	438

Chemical Properties: Paraffins—50-75%; Olefins—10-25%; Aromatics—10-25%.

From the above table it will be observed that motor gasolines as used in this country differ rather widely both in chemical makeup and physical properties from the material described in the article.

2. The article describes control procedures provided in order to reduce exposure to vapors of these solvents. These include internal exhaust systems and enclosing type devices for actual dipping operations. It can be assumed from this that these control measures may undoubtedly be effective to a degree. Nowhere in the paper are any data given relative to atmospheric concentrations of vapors. Therefore, we have no way of knowing what the actual exposure to plant employees might have been. It is conceivable, in view of indicated control methods, that actual vapor concentrations may have been below a level which would have been expected to produce a measurable effect on the employees.

On the basis of data presented, it does not appear that conclusions or comparisons can be made in terms of exposure to, or toxicity of, motor fuel gasolines, nor do the data available indicate a lack of toxicity of the materials described in the process owing to the fact that levels of exposure are not defined.

—N. V. HENDRICKS

Books

Air Pollution

BIOLOGICAL ASPECTS OF AIR POLLUTION, an Annotated Bibliography: HARRY HEIMANN, H. MORTON BROOKS, JR., DONALD G. SCHMIDT, Federal Security Agency. Printed as a public service by the United Steelworkers of America, CIO, 1950.

THIS pamphlet represents a helpful collection of literature items on the biologic aspects of air pollution. This bears the official imprint of the U.S. Public Health Service and is further identified as originating in the Federal Security Agency. One of several abstracted articles concerning the Donora episode berates the Public Health Service for engaging in the Donora investigation. That Service and particularly in relation to Donora needs no one to come to its support. Of all recent disasters, it would appear that Donora was the situation par excellence for Public Health inquiry. Clearly this involved the public health. Possibly the Service was more impressed than it should have been since, when the time came for the publication of this cognate report, it turned to CIO. A forepage carries this note:

"As a public service, the United Steelworkers of America, CIO, is glad to print this bibliography in the hope that it will help to solve the problem of air pollution in our cities."

Not necessarily does this involve any strange bed fellows. CIO may not be other than praised for fostering sound measures for better health anywhere. Still, more than one of the nation's taxpayers prefer that its official health pronouncements continue to be official, simon pure, unsubsidized, and free from complexities. Taxpayers looking over their tax assessments wonder if this is asking too much.

Epidemiology

THE HISTORY OF AMERICAN EPIDEMIOLOGY: C. E. A. WINSLOW, WILSON G. SMILLIE, JAMES A. DOULL, and JOHN E. GORDON. The C. V. Mosby Company, St. Louis, 1952, pp 167, $4.75.

WHEN the epidemiology section of the American Public Health Association reached its 20th birth anniversary in 1949, justly proud of its attainments, it decided to celebrate. It is a bit astonishing that any section so important as epidemiology should have organized only in 1929 when others are far older. That observation has little place in this book review. More importantly, it comes about that this book is the product of that celebration. However, some of the initial enthusiasm must have been dissipated, since three years were required to move from the oral presentation to the printed word. The only protest that is warranted is that this outstanding scientific material deserved immediate printing. No less, it is just as valuable today, since chiefly the record is one of history. This is reflected in the major section titles, which are: I. The Colonial Era and the First Years of the Republic (1607-

1799) The Pestilence That Walketh in Darkness; II. The Period of Great Epidemics in the United States (1800-1875); III. The Bacteriological Era (1876-1920); IV. The Twentieth Century—Yesterday, Today, and Tomorrow (1920-...).

Since the editor, DR. FRANKLIN H. TOP, was not one of the contributing authors beyond the foreword, no immodesty attends his lauding of the others: "The authors of this monograph have brought to their task knowledge, insight, and scholarly treatment. This volume should become a cherished document of American contributions to epidemiology."

It is far from true that epidemiology is the science wholly concerned with the outbreak of such diseases of typhoid or smallpox. Unmistakably many of the activities of the industrial physician involve epidemiology. Little does industrial medicine know this fact. It is high time that the industrial physician became aware of the epidemiology of industry. While this superb monograph by no means provides the techniques of epidemiologic study, it does furnish stimulus and inspiration. Is it too much to hope that soon there will appear from industrial medicine authoritative studies of such happenings as accident-proneness, dusty lung diseases, occupational dermatitis, and any such?

American Enterprise

DU PONT: THE AUTOBIOGRAPHY OF AN AMERICAN ENTERPRISE (in commemoration of the 150th Anniversary of the founding of the Company). Charles Scribner's Sons, New York, 1952, pp. 138.

DU PONT has done it again. This time with no startling new product that makes life a little easier or handsomer. Instead, but just as breath-stopping, with a book. No ordinary book, but one that suggests 20 issues of *Life* assembled under one cover. To mark its 150th Anniversary, Du Pont, in endless color photographs, maps and superb printing, portrays the industrial history of the U.S.

In 1802, on the Brandywine, a petty powder mill was erected by one Du Pont. What it is today, everyone knows. In the intervening years, Du Pont has touched the life of every person of the land—reached into other lands. If, unhappily, war came, Du Pont participated even to the point of being the possible instrument of victory. If peace prevailed, Du Pont stepped helpfully into the home, the farm, the workshop, the person. This book is the pictorial record of all that and more.

Reading and viewing this book, one becomes just a little prouder of his land, of industry, of free enterprise. Only this land could have fostered those amazing Du Ponts and in turn be the gainer through their contributions to the nation's development. The seductive quality of this book is that it makes the reader feel that he is a part of Du Pont; that this enterprise is a portion of the country, to be hailed as the possession of all the people like the Smithsonian Institute. That example deliberately is chosen to veer away from any implications of the political.

Savory Diet

THE SPECIAL DIET COOK BOOK: MARVIN SMALL. Greystone Press, New York, 1952, pp. 511, $2.95.

THERE comes the time when the benignant physician reaches down into the bottom right-hand drawer of his desk and brings up the printed white sheet. "This is your diet list; you will do well fully to live up to its restrictions." All well and good, if necessary, but that's not the end. The list might emphasize the use of such things as beets, eggplant, leafy vegetables. Surely there must be a way of introducing some variation within a long-continued diet of only limited items. That's where this book comes in. This is perhaps the first elaborate cookbook devoted to special diet requirements. This book could take potato rinds and make them palatable. In fact, it does! Take a look:

BROWNED POTATO PEELS

Makes 2 servings (50 calories). Calories in 1 serving: 25
Peel of large baked potato, which has been well scrubbed before baking
1 teaspoon butter
Salt

1. Cut potato peel into half-inch strips. Butter and salt both sides of strips.
2. Place on cookie sheet in very hot oven (450 degrees F.) until potato strips are browned on both sides.

Not entirely soul-stirring is it? More interest runs to the insides of that large neglected baked potato. Let's resort to another recipe not found in this book. Take that potato, mash up not too smoothly, add considerable butter and a little salt, mix in one-half teaspoonful each of pine nuts and sunflower seeds, mold into a cup-sized sieve, deposit on rimmed cookie sheet. Quickly brown, but don't burn the pine nuts. Color the top with paprika. Add more butter to the point of attraction. Eat it all yourself. How many calories? Now, just for once, let's forget about that! Maybe that discarded potato recipe belongs in the section dedicated to the skinny, undernourished souls who require something for their weight and figures.

Be not dismayed if put on a special diet. This book makes everything savory.

Protozoan Infection

TOXOPLASMOSIS: JACOB KARL FRENKEL and SAUL FRIEDLANDER. Federal Security Agency, Public Health Service, Washington, D.C., 1952, pp. 196—profusely illustrated, 50 cents.

WELL, just as it says, "Toxoplasmosis." Mostly this is a neo-natal disease. The newly born make poor industrial workers. Besides, there are laws forbidding such employment. So, into the hands of the pediatrist.

Pathology

SYNOPSIS OF PATHOLOGY: W. A. D. ANDERSON. The C. V. Mosby Company, St. Louis, pp 766, $8.00, 347 illustrations, 3rd Edition.

THIS book proves something. Until recently, no textbook on general pathology might be received as authoritative unless it weighed at least five pounds and thus from sheer size became a burden. This book appears to omit nothing essential but has been reduced to overcoat-pocket size. The first edition, in its preface, indicates the position of pathology in this language: "Modern pathology has a combined base of anatomy, histology, embryology, physiology, biochemistry, and bacteriology, and firms an essential linkage with clinical medicine. The difficulties in condensation and simplification of such a subject are fully appreciated. Nevertheless, its very complexity makes more necessary a concise synopsis in which essentials are included, but the broad outline and patterns of disease are not obscured by a maze of detail. The reactions to in-

jury which constitute disease follow a few well-defined designs. The main features of these should be familiar to every student of medicine and related sciences. Knowledge of the seemingly endless finer details and variations in the patterns of disease will continue to be acquired as long as an individual remains a student of a medical science. The process of learning is most efficiently and pleasurably accomplished by acquiring first the essentials and the broad outlines, with the addition of greater and greater detail as the subject is pursued further, rather than by adding minute fact to minute fact until the required mass is accumulated."

The preface to the third edition re-orients itself in this language: "In revision, the original objective was followed of a concise but comprehensive presentation of pathology, although always present is the temptation to expand every subject and present it in more detail. The condensed form of the earlier editions appears to have been found useful, so that continuing effort has been made to expend the time and care necessary to be brief."

This rigid adherence to condensation is a major virtue of this book, but condensation is not its only attribute. It appears to contain everything needful as a presentation of the science of human pathology. Since pathology is a meeting point of all other medical sciences, it is manifest that pathology reaches into industrial medicine, though at no point in the book is the pathology of industrial diseases any item of segregated consideration.

Paraplegia

CLINIC ON PARAPLEGIA. Kessler Institute for Rehabilitation, West Orange, New Jersey; 1952, pp. 49.

SINCE this is "Volume One, Number One," of a publication with kinship to occupational medicine, and since DR. HENRY H. KESSLER, the Editor, and creator of the Kessler Institute, is one of the grandfathers of industrial medicine in the United States, this salute is fired. The contents of this Volume One, Number One, fully run to rehabilitation with emphasis upon the paraplegic. None of the eight estimable publications is further reviewed. Best of wishes for a long and useful life for this new publication and its admirable and energetic Editor.

Allergy

CLINICAL ALLERGY: FRANCH K. HANSEL, M.D. The C. V. Mosby Company, St. Louis, 1953, pp. 1005.

THINGS are coming to a pretty pass. Almost everything is a sensitizer for some persons, paving the way for allergic responses. Pessimists long have predicted that members of the insect world, despite all those new pesticides, are about to take over and run the earth. Perhaps their pessimism should be redirected to the allergy producers, the numbers of which are multiplying with fecundity like that of guinea pigs. Many foods are allergens including good, wholesome, pasteurized milk. Many miracle drugs are offenders. Many forms of work threaten any continuation in large numbers of employments. Fortunately most allergic states are more troublesome than fatal.

All these statements are a bit extravagant. The book's author is far more earnest than the reviewer. Through 1005 pages, the author goes about the business of presenting many hundreds of allergic offenders, their modes of action, their points of attack, their consequences, and the way and means for diagnosing and treating these affronts. In all this he does a masterful job. Perhaps he too realizes the added burdens imposed upon the physician in the exploration of suspected allergic states. If a patient comes in with a suspected broken arm, the diagnostic procedure is simple, the questions few. The x-ray determines nearly everything. Not so when allergy is suspected. Deftly the author presents a questionnaire designed for inhalant allergies alone—242 essential questions. Now we understand fully the necessity for all those alleged high fees charged by the allergists. It requires some four hours solely for history-taking.

All in good time the author gets around to the industrial worker and his exposures to allergens. The listed number is appalling. The impulse is to run away from all work, walling one's self up in his own home. Even there there is no security, for the fleer promptly becomes sensitized to house dust and spends his days and his money combating house-dust asthma.

The author has done his work all too well. By way of punishment, let's take him to task. When he states, "Cooking odors of volatile substances from previously cooked or uncooked foods may be responsible for respiratory allergies and dermatitis," the author is vulnerable. He has laid himself open to doubt. No odor ever caused an allergy or any other organic disease. An odor is a sensation or a stimulus to a sensation. What he would have you believe is that many substances possessing odors or imparting the sensation of odor, through those same chemicals provoke allergy. All that is forgiven. This is a good book, but mighty disturbing.

Safety Library

INDUSTRIAL SAFETY AND HEALTH HANDBOOK: By the publishers of *Occupational Hazards*. Manufacturers Directory Co., Cleveland, 1953, $25.00.

THIS massive volume is proffered alike to safety engineers, industrial hygienists, and industrial physicians. By far, it best fits into the requirements of the first named. Long since, the safety engineer has graduated from responsibilities solely built around mechanical safety. No real safety engineer scorns dust, gases, noise, radioactivity, plant parasites, solvents or degreasing operations as beyond his territory. Certainly this is not the case if there be no industrial hygienist on the work premises. This volume provides weighty evidence of the widening horizons of the safety engineer.

At the first look, one may wonder why in the world all this highly diverse scientific material should be bound under one cover. It is indeed an entire library in itself from "administration" to "vermin." Then comes the light. All too many safety engineers do not have near to them facilities for alphabetic filing, "A to Z." So here it is, the self-filed, the self-contained library, immediately available. No remote cubbyholes. That convenience beats down any protestations as to the size of this volume and its somewhat awkward shape. It has a tabular index to an elaborate pool of the essentials of safety, with a flavor of industrial hygiene, and a tang of industrial medicine. This book bulges with usability.

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Invading the Worker's Mind

THIS MATTER of employee psychologic counseling is getting out of hand. So soon as any surge of activities concerned with the industrial worker arises and does not indubitably require the legalized services of the physician or nurse, there appears a swarm of the "pseudos," the fly-by-nights, the self-anointed. That is what's happening just now in the application of worker counseling. These peddlers on the fringes of medicine as ever are far more aggressive than the truly qualified, and far more active in thrusting themselves upon industrial management. "A bill of goods" is too often all that management is buying. The eagerness with which management temporarily espouses the half-baked is pathetic. Then, when the awakening comes—as it invariably does—the good is condemned along with the worthless.

The vendors of specious industrial soaps chiefly are but ridiculous in their foamy palaver, but tampering with the disturbed human mind—that's different. That's the practice of medicine, even though the Board of Medical Licensure may ignore this thrusting down the mental gullet of a lot of foolish guidance. The skilled psychiatrist or the really qualified psychologist is as cautious of his entries into the human brain as the brain surgeon required to remove a tumor. Too many "would-be" counselors are not blessed with any such divine restraint.

The industrial nurse, seeking to enlarge her usefulness on the industrial health team looks upon worker counseling as a natural expansion. How great is her caution, and how admirable. She knows her incapacities, and earnestly has set about the acquisition of this new skill. She leans upon training from the industrially experienced psychiatrist. When qualified, and soon she will be, she will provide reliability in worker guidance. Next to the physician and the skilled psychiatrist, she is the genuine counselor—the backbone of day-by-day application.

It is disturbing that the perturbed worker slumps in human and work capacities just as much from petty causes as from major ones. The expectant primiparous father may attain to drooling ineffectiveness from worry that his wife might give birth to a two-headed monster, even knowing that that disaster may come about only once in some 10 million births, with as much mental disturbance as though that catastrophe already had transpired. The lovely green-eyed siren may approach a debacle knowing her amorata emotionally is wedded only to the brown-eyed ones, bringing up as much internal energy as though that amorata suddenly had been stricken blind. Worry in terms of cause is not rational in quantity. The patient counselor must put up with the trivial along with the profound, even when that trivial lies close to the disgusting in insignificance. To the worrier every cause assumes the gigantic.

Mostly the mentally beset worker, apart from real psychiatric states, just wants someone to listen to his outpouring of woes. Without engaging in any debate as to the efficacy of prayer, let it be asserted that prayer is a mighty form of self counseling. The praying one believes there is a listener. Sometimes without the intermediation of any deity the prayer finds the answer to his pleading, but he himself answered that prayer. Prayer makers should exercise stern

caution in any reasonable pleading before a silent listener. Often, indeed, the beseecher will be blest with favorable response—but of his own making. In small measure the sympathetic, able counselor becomes a pettigod—the pettigod of listening. Out of full outpouring as often as from sage guidance comes the answer. Counseling is akin to religion. Listening becomes a part of the prayer. In that sacred relationship there is no place for the psychologic imposter.

By no means is all mental wryness at any profound level. Mundane or earthy is the word—gripes, complaints, quirks. The workplace is too hot, too cold, too smelly, too dark, too bright, too noisy, too quiet, too fatiguing, too monotonous, too profane, too alcoholic. The home is beset by debts, wayward sons, unruly daughters, faithless spouse, sleepless nights, poor food, disturbing neighbors, bad dreams—of such there is no end. In truth, all this is but life—difficulties common to all; but to the immature, the malcontent, every item is a catastrophe requiring outpouring and listening. Prayer may not always be in order, but the sagacity of a Solon would be taxed, to say nothing of patience. Again the psychologic imposter may not be leaned upon as an infallible oracle.

The psychiatrist, the industrial physician, the psychologist, the industrial nurse all have a new duty. Let industrial management know full well that the woods are full of psychologic imposters; that no degree of mental salvation will proceed from their self-assumed auras; and that the worker's mind, if invaded at all, is only to be approached in cautious intelligence but abundant humility.

The Impression Made

STRONG is the desire of men and women to live in a world surrounded by the definite. No nuances—no mental shades of grey when only black or white is wanted—no "could be's"—no uncertainties. That happy world will never come. Of the few certainties that attend life, we have always the certainty of uncertainty. The final wisdom of a race should be found in its aphorisms. Even aphorisms fail. It may be true that "a bird in the hand" is more valuable than "two in the bush." It may be true that "there are bigger fish in the sea" than ever have been caught. Even that has not been proved. But it is not even uncertain that "barking dogs never bite"; or that "it is always darkest just before the dawn." The old-time German was given to the shouting of "Doubt a doubt and you have a fact." That is not necessarily so. At best the only acquisition is another doubt. When we are shaken in our aphorisms, we are shaken indeed.

We might as well accept the inevitable of no prospect of total factuality, complete objectivity, serene certainty. Even if that were true, along comes the staggering realization that factuality often is a flimsy, unreliable instrument. The impression made by anyone who dispenses facts may be more significant than undeniable facts. Facts to be useful must be given wings. Wings or the absence of wings attending facts form the basis of impressions.

None of this is mere idle, evanescent philosophizing. Right into this present hour every physician, along with every other adult human being, may gain by the acceptance of the indisputable that the impression left may be of import equal or akin to the reliable content of his spoken or written word. Little does the physician know when his single word or one-handed gesture shifts the thinking of the hearer or the beholder.

The medical society was staging an important dinner meeting. The oncoming speaker was notable, his audience expectant. The preprandial cocktails were above reproach, the dinner passed muster—then the speaker. The meeting was a failure. The essayist was dripping with facts. He was fully content to let those facts speak for themselves. He was not inspired. If he had anything of himself to lend to the occasion, he withheld that contribution. He appeared in a black shirt, not that that is a scientific crime, but at least it was not flattering to a would-be admiring audience. Only Einstein may wear clothes like that and escape unfavorable notice. The few who remained for the 90 minutes of drabness left hurriedly, muttering disapproval. The gentleman had failed to make a good impression, and had made no visible effort to make such an impression.

Hour by hour impressions are made—good or bad. Impressions on every patient, in the clinic, on assistants, on the platform, in conveyances. Impressions are made by behavior, manners, language, attire—everything. The bad impression is no trivial consequence, nor is it flattering. Facts indeed are precious but insufficient in themselves. The good impression is priceless.

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Half Absent

THERE are many half-men in industry today who are not drunk on the job and who are not really hung over from a drunk off the job. But they drink too much, and they are only half present some days.

—DR. SELDEN D. BACON, Director, Yale Center of Alcohol Studies.

No Alcohol Problem?

THROUGHOUT the U.S. 175,000 men stay away from their jobs every working day of the year as the result of drinking, making a total of 60 million man-days lost a year. This is nearly one and a half times the number lost in 1951 as the result of industrial accidents and nearly three times the number lost from strikes.

—*Life*, quoted in *The Management Review*, February, 1953.

Have to be Shown

STATE Health Department engineers report their job is not so much one of persuading owners to remove industrial health hazards as convincing them a particular hazard exists.

—*Grand Rapids, Michigan, Herald*, February 1, 1953.

Following Through

A COMMON weakness in most efforts at selective job placement is that the handicapped worker may be transferred from his original position to another without knowledge of the medical department. One company has evolved a system to obviate this. A medical sticker is attached to the employment record of each physically handicapped person. Whenever an employee is to be transferred, a transfer slip must be sent to the employment office and must be added to the individual's file. A medical sticker on the individual's file indicates that the transfer must clear through the medical department. Obviously, with a system like that developed in the Kaiser Shipyards, it would only be necessary to match the individual's capacities analysis with the demands analysis for the new job.

—LESLIE W. FOKER, M.D., in *Connecticut State Med. J.*, quoted in *West Virginia Med. J.*, March, 1953.

Willys-Overland

UAW-CIO local 12 has completed negotiations with Willys-Overland for a management-financed diagnostic clinic. A $457,000 fund will be set up to build and equip the clinic, expected to be operating before the end of 1953. Operation expenses, expected to run about $100,000 a year, will be drawn from a surplus in the Willys-Overland insurance fund. The clinic will be the property of the 14,000 members of the local 12 W-O unit and its services will be available to them for nominal fees. All other local 12 members also will be permitted to use the clinic under another arrangement. The clinic will examine patients and refer those needing treatment to the proper doctors or hospitals. The W-O medical insurance program will take over financial responsibility at that point.

—*Public Health Economics*.

Philadelphia Course

MORE than 40 leading industrial firms and business concerns in the metropolitan Philadelphia area have applied for participation in the new course in industrial medicine instituted at the University of Pennsylvania to continue through May 6. The course is sponsored jointly by the Chamber of Commerce of Greater Philadelphia and the Department of Public Health and Preventive Medicine of the University of Pennsylvania School of Medicine. It has for its objective the improvement of health standards among industrial workers and raising the levels of medical care for workingmen and women. Twelve lectures and discussion periods are included in the course. The lectures are to be given by competent authorities in the field of industrial medical services, together with recognized leaders in the medical profession.

—*Camden Courier-Post*, February 16, 1953.

Studebaker

THE company's hospital plays an important role in the company's health plan. DR. J. W. HILBERT has headed the central dispensary staff since 1919. He is assisted today by DR. ROBERT D. DODD, DR. FREDERICK L. KUHN, and a staff of 20 industrial nurses. The hospital is open 24 hours a

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Medical Director: (IM-142) 44; graduate of leading eastern medical school; six years Medical Director heavy steel fabricating plant, 12,000 employees; three years, Medical Director even larger company; highly regarded in industry; has outstanding record.

Medical Director: (IM-143) Middle forties; five years Assistant Professor physical diagnosis and internal medicine, university medical school; army experience as administrator and flight surgeon; many years successful private practice; prefers directorship, with regular hours. Highly recommended.

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Medical Director: (6) Large industrial plant; surgical training needed; East.

Medical Director: (7) Full charge medical program industrial company; also build own private practice; county seat town; Illinois.

Assistant Medical Director: (8) One of leaders in oil refining field; several years industrial experience required; Philadelphia area.

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—*New York Herald-Tribune*, February 22, 1953.

Newcastle Disease

NEWCASTLE disease, commonly believed to be exclusively a disease of poultry, may have greater significance for man than is generally realized, according to University of Wisconsin scientists. The disease is known to affect laboratory and packing plant workers, and at present it usually causes only a mild eye infection, and sometimes a sore throat or running nose. In rare instances, the infection is somewhat more severe, and there is always the possibility that the virus might change in character enough to become a new type of epidemic influenza. The study of Newcastle disease in man was conducted by DRS. ROBERT W. QUINN, ROBERT P. HANSON, JOHN W. BROWN, and CARL A. BRANDLY, of the University of Wisconsin. These scientists also report they have isolated and identified the virus from infected humans. They found that the Newcastle disease virus, like the virus of influenza, can spread throughout various organs of the body and remain in an active form despite the absence of disease symptoms. This characteristic would make it possible for mutants to arise which might be more virulent than present forms and cause a more serious disease.

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Rehabilitation

THE experienced physician realizes that it is not only the severely injured who is a candidate for rehabilitative measures. It has been my experience that patients suffering from the so-called chronic low back, chronic shoulder lesions, or chronic neck pain, may be severe psychologic, as well as, orthopedic cripples. Many of them tend to give up their jobs and their attitudes become bitter. This often may be due to failure to realize the problem inherent in these cases and that definitive therapy is indicated. Even in the best orthopedic hands treatment definitely is a major problem. A definite understanding of the basic pathology in each such condition is essential. The mere application of diathermy to the low back for one and all conditions, hardly can be recommended, for, while it may seem beneficial for an hour or two, this can in no way be expected to cure the patient of his difficulties. Oftentimes bracing in the form of corsets or back brace in this type of patient may be necessary. The importance of proper evaluation of the conditions of the patient's feet as related to back pain should not be overlooked.

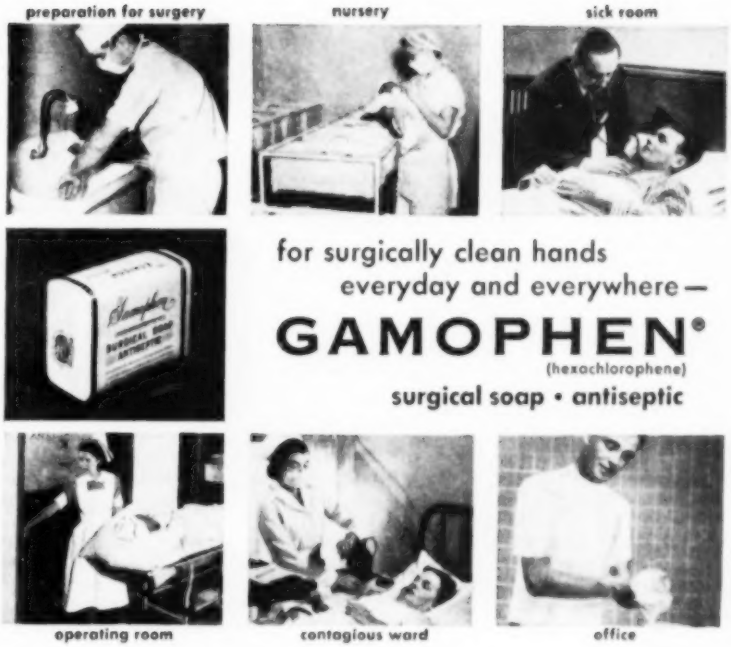
—From "Third Stage of Medicine," by JOSEPH H. GIESEN, M.D., in *J. Maine Med. A.*, February, 1953.

Small Plants

HUNDREDS of small plants around the country are sharing the costs of health programs with other plants

in their vicinity, so they can provide medical services equal to those of larger companies. Here are two examples: In Atlanta, Georgia, three companies with a total of 800 employees set up a central clinic attended by a physician three hours a day. A full-time nurse was engaged to spend five hours a day in the clinic and one hour a day in each plant. Plants have their own first-aid service. For other care and treatment employees go to the clinic. In Hartford, Connecticut, eight companies with total of 3,500 employees have a full-time doctor, each plant paying a part of his salary proportionate to its share of his time. Each company has its own dispensary, served by a full-time nurse. The doctor visits each plant every day. Services usually include pre-placement and periodic physical examinations, individual counseling, health education, job placement, safety measures, and treatment of minor injuries. Some plants include home visiting by nurses. Cost to the companies usually ranges from $15 to $30 a year per employee—depending on the services provided, the number of employees, etc. (Further information available from (1) National Association of Manufacturers, Industrial Health and Safety Committee, 14 West 49th Street, New York 20, or (2) U.S. Public Health Service, Division of Industrial Hygiene, Washington 25, D.C.)

—*Medical Advance*, March, 1953.



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—*Battle Creek (Michigan) Kiwanis News Letter*, quoted in *Pennsylvania Med. J.*, March, 1953.

Problem Drinking

A FIVE-DAY training course for business and industrial personnel will be held at Yale University July 27 through July 31, 1953, to acquaint selected representatives of business and industry with the nature of problem drinking in industry, with policies of treatment, retirement and separation, with procedures and resources for treatment and with programs of education and prevention. The course will consist of lectures and seminar groups with a staff drawn from the Yale Center and from companies with experience in meeting these problems. It is open to representatives of business, industry and labor who are engaged in industrial health, personnel work, industrial relations or related activity. Requests for further information should be addressed to SELDEN D. BACON, Director, Cen-

ter of Alcohol Studies, Yale University, 52 Hillhouse Avenue, New Haven, Connecticut.

Operation Chlorophyll

IT SEEMS THAT one woman in an office of a Chicago manufacturing company didn't take the beneficial effects of soap and water too seriously. Her presence constituted a direct attack on the sensitive noses of her co-workers. They complained to the supervisor, who didn't know how to handle the issue. The girls then took matters into their own hands—putting chlorophyll candles on their desks and open bottles of cologne in front of the fans. Their heavy-handed bantering got out of control, however, and the personnel director had to step in with a resounding reprimand for all. Personnel men, agreeing that it can be quite embarrassing to deal with such a situation, are unanimous in saying that it must not be evaded. Their solutions boil down to these: Direct approach: If you think you're not the person to talk to the offender, ask someone else to do it. Scientific approach: "Our supervisors don't have to handle these problems themselves," reports one personnel man. "We have a medical department and a nurse. The offender is treated as a medical case, sent to the nurse by his or her supervisor. The nurse handles it as a health problem. Saves embarrassment all around." Glamour approach: Some companies handle the problem as part of a larger one on good grooming and personal appearance. They have outside consultants come in and give their women employees courses on how to dress and how to groom themselves properly. Courses of this type can easily be worked into the induction program for new employees. And the firms find that even the women who have been in their employ 20 years cannot resist a course on how to make themselves irresistible. The glamour courses, however, seem best suited to fairly large organizations. And the men are out of the picture completely. For this reason, many companies prefer to distribute booklets on personal care to both men and women employees. Bristol-Myers (45 Rockefeller Plaza, New York 20, N.Y.) stands ready to supply leaflets on good grooming upon request. Their Educational Service Department publishes one booklet especially for men, another for women. Written with a light touch, both leaflets emphasize the importance of good grooming in job success —for office personnel, salesmen, waitresses and others in service occupations. Included are lists of pointers for self-checking.

—*Supervisor's Personnel Newsletter* (Bureau of Business Practice, New London, Conn.), December, 1952, quoted in *The Management Review*, February, 1953.

The Worker and His Religion

HOW do the religious convictions and practices of employees affect their job performance? In a survey conducted recently by the Group Attitudes Development Corporation, 400 representative employees of a Midwestern manufacturing company were interviewed in an effort to throw some light on this question. Half of these workers were considered efficient and well-adjusted by their employer; the other half had job records showing signs of problems and dissatisfaction. Among the survey findings: Half of the employees interviewed attend church regularly. One in four goes to church occasionally.

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One in four never goes at all. Almost all of them send their children to church school, but most give money to the church more freely than they give their time. Most workers pray —about health, about their family, and for security. When occasion arises, they pray for guidance on specific problems —but very few ever pray for guidance and strength in job situations. Three out of four workers who rated high in religious belief were on the company's list of well-adjusted employees. In contrast, most workers with a record of problems and accidents rated low in religious belief and practice. While most of the workers interviewed recognize their moral responsibilities as citizens, husbands, and fathers, a surprisingly large number did not associate similar moral responsibilities with their jobs. Several said, for instance, that when they receive too much change at the store they return it; but if the company, through some bookkeeping error, were to overpay them, they would keep the overpayment.

—JANE STEWART in *Guideposts* (Guidepost Associates, Inc., Beekman Tower Hotel, New York 17, N.Y.) October, 1952.

Lost Pride

LESS than ever before does the laborer identify himself with his job. A decline in the spirit of workmanship has long since set in under the impact of mechanization. Moreover, the general rise in all earning power has tended to divorce the worker from the specific job by minimizing the importance of wage differentials based upon specific skills. The job, no matter what its character, is regarded as a source of income only, and the best pay attracts the worker. The decline in hours, like the diminution in the value of skills, is evidence of the extent to which the worker shuts his work off into a separate category of his existence. In so far as he can, he curtails the time devoted to the job, because the life from which he hopes to derive pleasure and satisfaction begins only after he punches out on the clock.

—From "Will American Labor Go Conservative?" by OSCAR HANDLIN, in *Atlantic Monthly*, February, 1953, quoted in *The Management Review*, February, 1953.

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SIX YEARS ago, nine Birmingham, Alabama, firms with 2,500 employees formed an Industrial Health Council to help reduce absenteeism and accidents. Its success can be measured by its growth. Today it has 250 firms with 70,000 employees—85% of all Birmingham companies with 25 or more employees. They include factories, hotels, stores, insurance companies and others. Organized labor has cooperated from the beginning. The Council's two major activities are (1) health education, and (2) diagnosis and screening. The basic philosophy is prevention. *Manpower*, a monthly health tabloid, goes to every employee. Health posters are issued to all member firms twice a month. Booklets are issued four times a year. Each test that employees undergo is explained by leaflet. Movies and weekly radio programs round out the education program. The diagnostic and screening service includes tests for tuberculosis, syphilis, diabetes, blood pressure, heart action, seeing and hearing, nutrition, and others. Clinics for individual counseling are held weekly. Tests are voluntary, conducted on company premises by mobile units. Pre-employment tests are given every Saturday morning. Reports go directly to the individual employee. Many companies have in-plant committees to work with the Council.

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Many companies report reduced absenteeism and accident rates. Most report increased worker efficiency and better employer-employee relationship. The cost to member firms is $2 to $3 per employee per year. The Council's address is P.O. Box 2591, Birmingham, Alabama.

—*Medical Advance*, March, 1953.

That "Coffee Break"

J. P. ANDREWS, international president of the National Office Management Association, is critical of Administration leaders who are considering abolition of the "coffee break" for government workers in Washington and elsewhere throughout the country. He feels that the "coffee break" has been turned into a vital production tool by civilian business. When properly managed, the coffee break can prove valuable to morale and productivity. Andrews admits that the practice has been abused by some government employees but he adds that the fault lies with "improper procedure" and not with the idea of the coffee break itself. He explains: "U.S. industry was faced with the same problems of wasted time that now exasperate the new Administration. But industry turned the coffee break into a plus factor by regulating it as carefully as any other phases of office or plant management." Citing the case of the Mutual Life Insurance Company in New York, he said that the firm found it had an average of 800 employees leaving their desks for unauthorized coffee breaks for varying durations. The company now has coffee delivered at "break" time to its 2,000 employees. By controlling the privilege the company saves approximately $130,000 annually in labor costs. Both parties are happy, since the workers get their coffee and the company saves time. In a survey conducted by Fact Finders, Inc., the following benefits were shown to result from properly handled coffee breaks: 82% of the firms surveyed noted a reduction in worker fatigue; 75% reported improved employee morale; 62% claimed that the productivity of the workers increased; 32% noted a reduction in accidents, and 21% stated that labor turnover was reduced after the coffee break instituted by the management.

—*Journal of Commerce, New York*, March 5, 1953.

Tobacco Dust

NO DUST is utterly harmless after long and extensive inhalation, but tobacco dust is one of the least damaging. Long ago, the tobacco trades were rated among the least desirable; wages were low and working conditions not above reproach. Under such circumstances, tuberculosis occurred frequently and at first was attributed to working conditions. Soon it was determined that the tuberculosis incidence was no higher among tobacco workers than in the community at large. The term "tobaccosis" probably was coined by Zenker, whose ob-

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servations were limited to autopsy of two workers exposed to tobacco dust, who had mild brownish pigmentation with a distribution similar to that in anthracosis but with less pigmentation than occurs in the average case of anthracosis in an adult. Tobacco dust contains about 0.5% nicotine. This may affect the new worker in the same manner that the smoking of the first cigarette or cigar does. In addition, there may be a more persistent conjunctivitis, laryngitis, or rhinitis during the first six months of employment. Since tobacco plants are often sprayed with arsenicals as pesticides, there has been much speculation about arsenic poisoning and possibly lung cancer from this source. No records provide proof of actual damage, although arsenic may be detected in traces in almost all tobaccos. With the advent of an increasing number of plant pesticides, many of which are toxic, the possibility exists that new occupational diseases may appear among agricultural workers and handlers of plant products, such as tobacco leaves. Rarely, sensitization to tobacco appears and is usually limited to dermatitis or respiratory tract manifestations. Such conditions could arise from tobacco dust in product manufacture. Some allergy attributed to tobacco results from settled pollens, such as ragweed pollen, on tobacco leaves. By and large, tobacco dust is only a nuisance dust. This answer is wholly concerned with tobacco workers and does not concern the matter of lung cancer or other injuries from prolonged tobacco smoking.

—From "Queries and Minor Notes," in *J.A.M.A.*, March 7, 1953.

No Cancer

AN EXAMPLE of a corporation and a medical school working together to solve an industrial health problem. During the war, catalytic cracking of petroleum was developed by Standard Oil Development Company to meet the demand for high octane gasoline. In this operation, certain petroleum fractions are heated in the presence of a catalyst and large petroleum molecules are broken down into small molecules such as are found in gasoline, kerosene and home heating oils. Since the residue from this process contains chemicals similar in structure to known carcinogens, the company wanted to find out whether this particular residue was dangerous and, if so, what safeguards were necessary. Accordingly, DR. ROBERT COLLIER PAGE, General Medical Director of Standard Oil Company (New Jersey), arranged with Memorial Center for Cancer Research (affiliated with Cornell University Medical College) and later with New York University Medical School for a joint research project with Jersey Standard and SODC to study: the chemical properties of the suspect materials to see if the hazard could be reduced; the effect on mice and other laboratory animals of exposure to the material; the manufacturing processes in the plants to find out when and where individual workmen were exposed; the industrial hygiene measures necessary to protect the workers. Involved were six refineries with 4,000 employees, mostly pipe-fitters, maintenance mechanics, tank cleaners, dock workers, cracking-unit personnel, and laboratory personnel. The material was found to cause cancer in mice, and 20 measures for worker protection were adopted in the refineries. The entire project took five years and cost the company more than $250,000. So far, no case of cancer caused by handling the materials in these plants has been reported.

—*The Medical Advance*, 1:3 (February) 1953.

Record

GENERAL MOTORS' New Departure Division plant in Bristol, Connecticut, where 4,500 men and women make ball bearings and bicycle coaster brakes, has one of the lowest absenteeism rates—2.4%—of any comparable plant in the country. This record, management feels, is due chiefly to the plant's health, personnel, and safety programs. Management's aim is to match the worker to the job, and send him home each day in as good shape as he came. Jobs are rated according to physical and other demands—lifting, climbing, reaching, sitting, stooping, pushing, carrying, and the like. New employees are thoroughly screened physically. Some get aptitude tests. All undergo periodic physical examinations. When an employee transfers from one job to another a complete physical and safety check is made to insure his fitness for new assignment. The plant's medical center is completely modern. Equipment in-

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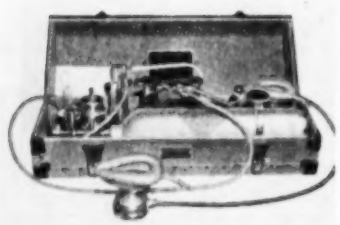

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—*The Medical Advance*, 1:3 (February) 1953.

Shock

PROMPT and effective first aid in case of shock, which commonly results from wounds and accidents, can be given by anyone who understands the condition, according to Dr. Robert J. Cook, St. Louis (in *Today's Health*, (January, 1953) published by AMA). Counteracting anxiety by reassurance, assuming a calm and cheerful manner, and diverting attention are important aspects of treating shock. In addition to offering reassurance, treatment consists of giving a blood transfusion if there has been blood loss, a plasma transfusion if there has been loss of blood fluids, or administration of large amounts of fruit juices if there has been excessive dehydration. "To counteract severe pain, morphine is usually used. To counteract the lack of blood in the brain, the head may be lowered. To counteract the cooling of the body due to the evaporation of sweat, the patient is wrapped in warm blankets. Artificial respiration may be used if there is respiratory failure. Undue bleeding is controlled by tourniquet or a compression bandage." The average 150-pound person has approximately 10 pints of blood. If more than three pints are lost, shock usually occurs. However, it can occur even if one pint is lost; this depends largely on the rate of loss. Although shock can set in within 15 seconds after an injury, it usually begins much later. If apprehension, chilling, pain or blood loss can be reduced within eight hours of the injury, shock can be prevented. Shock, a relative lack of blood in the body, may be caused by a decrease in the normal blood volume, and an increase of the total capacity of

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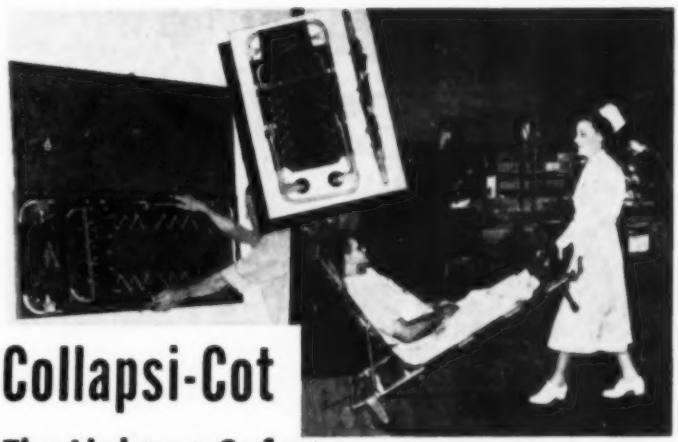
the blood vessels, or most commonly, by both conditions to some degree. "Decrease in the blood volume may be caused by internal or external hemorrhage as a result of injury, or by loss of water and salt, such as from sweating in heat exhaustion or following large-scale vomiting or diarrhea. The increased capacity of the blood vessels may result from nervous reflexes induced by acute anxiety, by contact with high voltage, or by severe pain. The relative lack of blood in shock often results in too little blood reaching the brain, and drowsiness or unconsciousness may be produced. If the lack of blood is not overcome within 12 to 24 hours, death usually occurs."

Roman Holiday

MILTON J. SCHWARTZ, *Baltimore Sun*, February 23: "In the ring game itself, some fear that too many safeguards will cut down on the number of knockouts which they think is important for the sport to keep its popularity with the fans." Meanwhile: seven deaths so far this year; 108 since 1946. DR. FRANK FERLAINO continues to urge national standards.



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1. Behrman, H. T., Combes, F. C., Bobroff, A., Leviticus, R.: Ind. Med. & Surg. 18:512, 1949.
2. Turell, R.: New York St. J. M. 50:2282, 1950.
3. Heimer, C. B., Grayzel, H. G., and Kramer, B.: Archives Pediat. 68:382, 1951.

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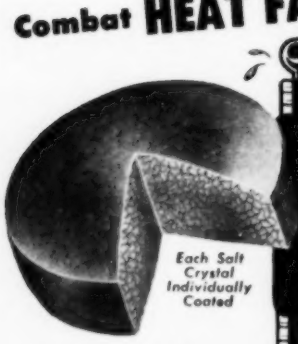

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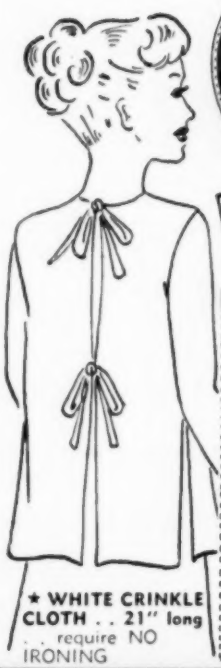

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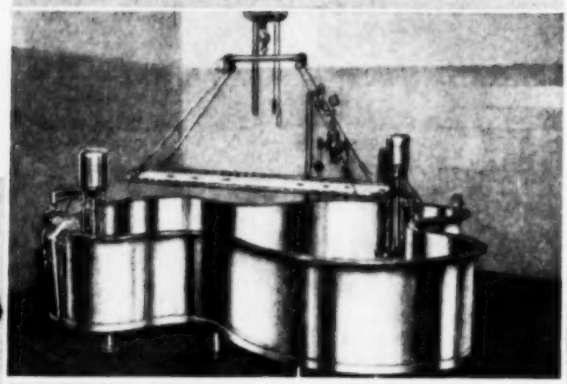

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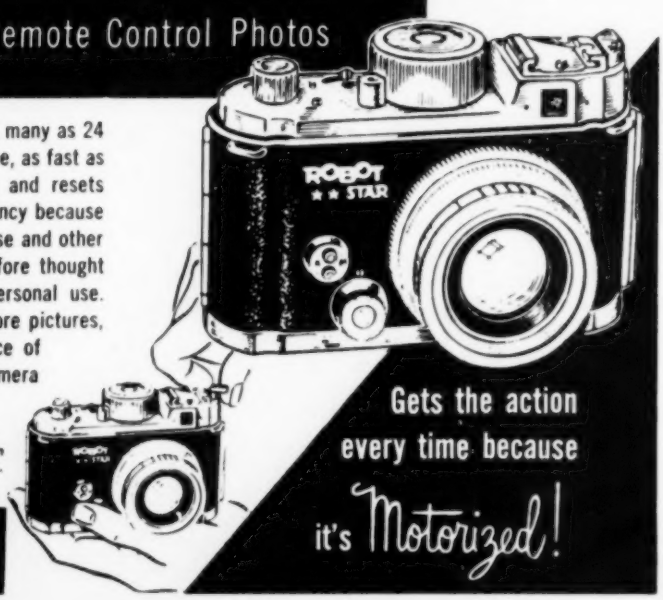

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RIASOL contains 0.45% mercury chemically combined with soaps, 0.5% phenol and 0.75% cresol in a washable, non-staining, odorless vehicle.

Apply daily after a mild soap bath and thorough drying. A thin invisible, economical film suffices. No bandages required. After one week, adjust to patient's progress.

Ethically promoted RIASOL is supplied in 4 and 8 fld. oz. bottles at pharmacies or direct.

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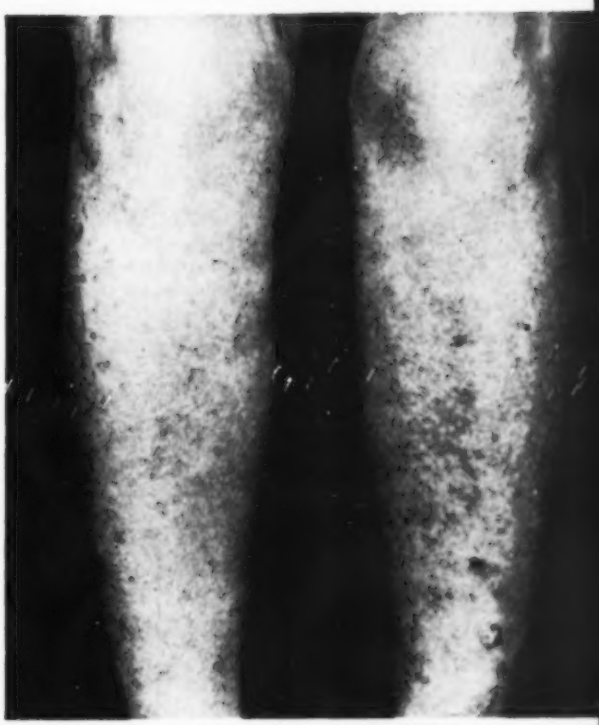

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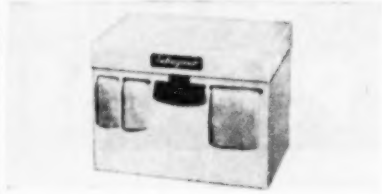

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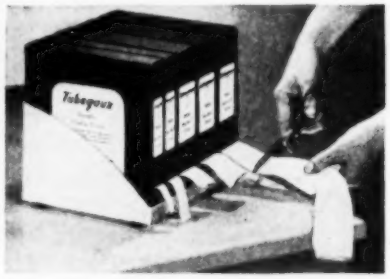

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Sterile, elastic dressings made with specially designed weave that permits normal freedom of movement. 4-Ply gauze pad in center.

Round Spot Dressing—¾"
Round Spot Dressing—1¼"
Square Patch Dressing—1½"
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They conform without wrinkling, overlapping, crinoline backing for easy removal. Sterilized and individually wrapped in glassine envelopes. Packed 100 to a box.

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An industrial physician writes: "A worker who cannot stay at his job because he has a bad headache is not really much better off if his complaint is alleviated by an analgesic that leaves him with nausea which also incapacitates him."[1]

REFERENCES:
1. Gastric Tolerance for Aspirin and Buffered Aspirin. Ind. Med. 20:480, Oct. 1951.
2. Effect of Buffering Agents on Absorption of Acetylsalicylic Acid. J. Am. Pharm. Assoc., Sc. Ed. 39:21, Jan. 1950.

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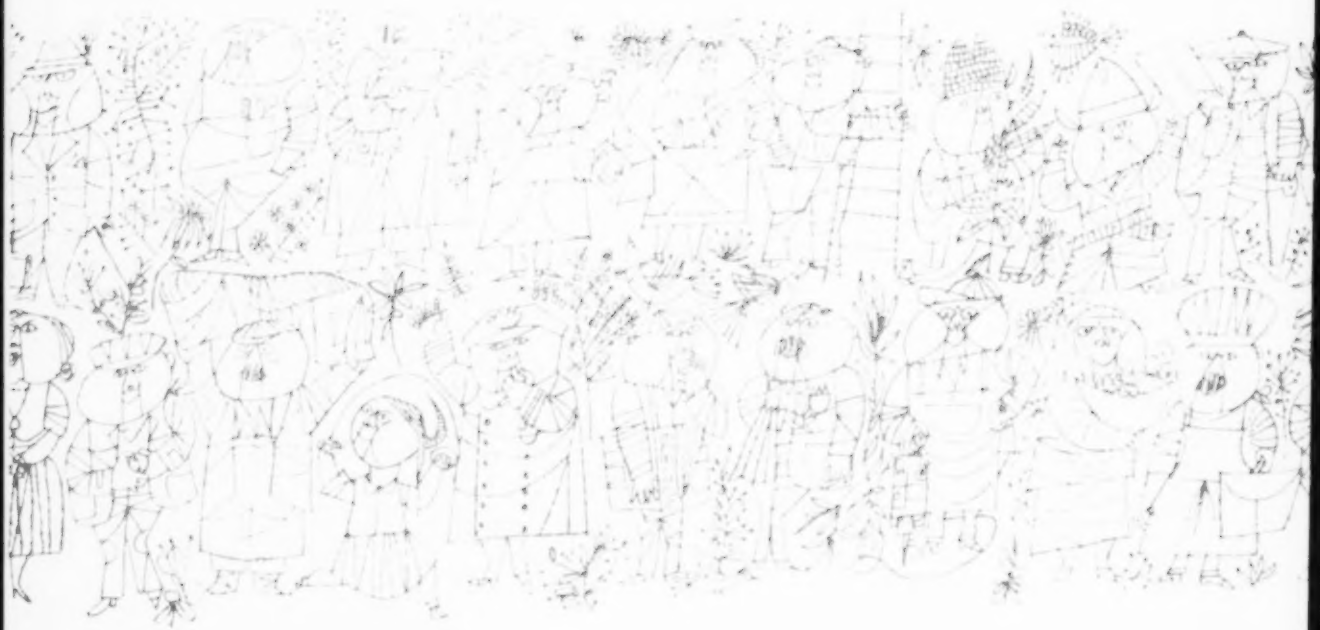

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